Commodore®
MAGAZINE

RUN

THE COMMODORE 64/128 USER'S GUIDE

November 1990
An IDG
Communications
Publication

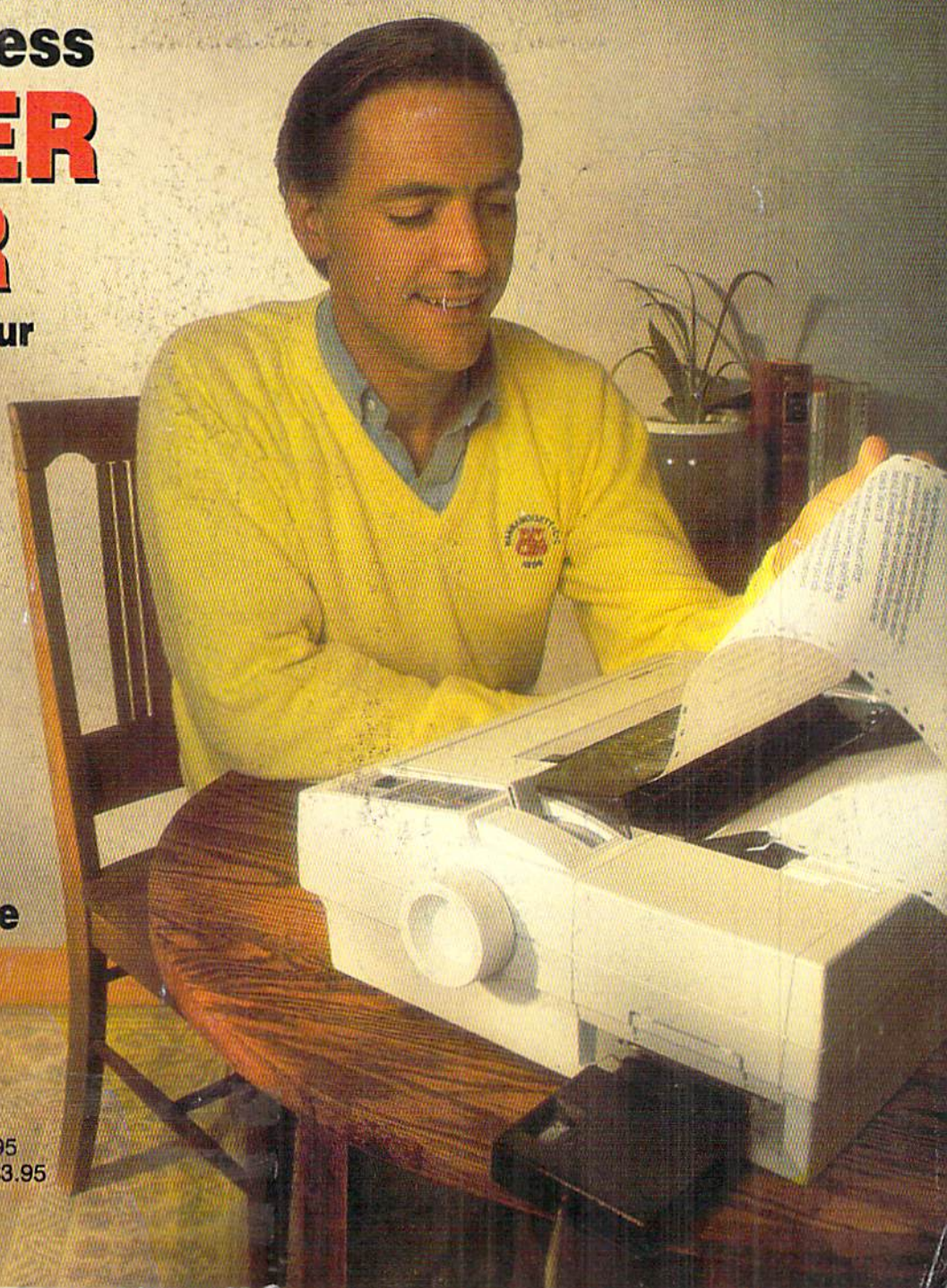
FREE SOFTWARE
You Can Own (see p. 29)

How to Harness PRINTER POWER

- 10 Solutions to Your Problems
- Jazz Up Your Printouts
- Which Is Better: 9- Vs. 24-Pin?

PLAQUE ATTACK!
C-64 Arcade Action

Plus:
- Macro Mania
- Machine Language Magic
- geoStripper



0 74470 12069 11

U.S.A. $2.95
CANADA $3.95
U.K. £2.00

Ultima VI

The False Prophet

This #1 Best Seller Now Available For **Commodore 64/128**

SPECIAL Limited Edition OFFER

Celebrating ULTIMA's 10th Anniversary!

Ultima VI: *The False Prophet*

- *EXCITING SPECIAL FEATURES at No Additional Cost... still only $69.95*
- *Personally autographed by Lord British*
- *Exclusive taped interview with Lord British*
- *Unpublished game clues and hints*
- *Specially selected high quality moonstone*
- *FAST, FREE delivery - direct from Origin*
- *This "Special Edition" is not available in stores*
- *Hurry! Supply is limited*

Call: 8am - 5pm (central). MC/Visa accepted. ***1-800-999-4939***

ORIGIN™

We create worlds.

1989 Origin Systems, Inc.

Why do over 17,000* Commodore® owners like you buy *Loadstar*™ every month?

See why with a three-month trial subscription for only $19.95!

Loadstar is the monthly software collection created for users of Commodore® 64/128 computers. Each month, *Loadstar* subscribers receive two 5¼" disks packed with six to ten original programs. Here are eight reasons why more and more Commodore owners are subscribing to *Loadstar*.

1. Variety.

No where else will you find this quality and quantity of ready-to-run software. Each issue contains personal productivity tools, games, educational software, utilities, GEOS® programs, and more delivered to your home! Plus the friendly, interactive ***Loadstar*** format makes it easy for every member of the family to run programs quickly!

2. Demonstrations.

Periodically *Loadstar* offers Special Previews of limited-use programs so you can "try-before-you-buy". Major software companies from around the world offer our subscribers advanced previews of what's to come in commercial software.

3. Program Integrity and Tech Support.

Every issue of *Loadstar* passes through dozens of quality checks, all to ensure you of error-free enjoyment. When necessary, you can count on the ***Loadstar*** technical staff to answer your questions quickly!

4. Create Your Software Library.

With so many original programs at your disposal, it won't take long to collect an entire software library. ***Loadstar*** is packed with all the exciting graphics and games that Commodore is famous for. You can spend hours of enjoying your software, even use your Commodore as a learning tool for children.

5. Super Discounts on Commercial Software.

Loadstar subscribers automatically become members of our *Software Savers Club* and receive periodic sales flyers with information on the latest products from leading software companies at up to 40% off retail price! You can also select back issues of ***Loadstar*** to fill in the holes of your software collection.

6. Reasonably Priced.

A three-month trial subscription to ***Loadstar*** is only $19.95 (three big issues). That's just $6.65 an issue! Just think, one time-saving or entertaining program is worth more than that. You simply can't lose!

7. Low Subscription Price.

Order your ***Loadstar*** trial subscription within ten days and receive free, **The Best of Loadstar, Vol. 4**. This bonus disk is a fantastic selection of the best programs from recent issues.

8. Money-Back Guarantee.

If for any reason you're not completely satisfied, simply return your first issue for a fast refund (keep **The Best of Loadstar, Vol. 4** as our gift). ***Loadstar***, like every product from the Softdisk Publishing family, comes with an iron-clad satisfaction guarantee!

3-Month Trial Subscription only $19.95

"*Loadstar*...should dispel the adage about there not being any decent software available anymore at a decent price. I give *Loadstar* five stars."
—*McCook Commodore Users Group*

"If you can afford only one disk service, make it *Loadstar*."
—*Commodore Microcomputers*

Contents of Issue #72
(Available as a back issue)

Triangulation—A unique game of strategy for the sophisticated puzzler.

The Source Generator—Turn machine language code into source code in any three standard formats.

Who Sang "Teen Angel?"—Test your memory of the greatest hits!

Wordpacker—Pack text files and save valuable disk space!

Plus 4 more great programs!

Call Toll Free
1-800-831-2694

ORDER TODAY!

Send in the order form now or call toll free for a trial subscription. Three sample issues are only $19.95, and you get the free bonus disk. So fill in the coupon or call **1-800-831-2694** for even faster service.

***As of press time, but growing by leaps daily.**

SOFTDISK PUBLISHING
monthly software

YES! Rush my free bonus, **The Best of Loadstar, Vol. 4**, and start my three-month trial subscription to ***Loadstar*** for only $19.95, postage paid. *Canada/Mexico, $24.95; Other foreign, $27.95.* Make check or money order payable to **Softdisk Publishing** in U.S. funds. (Louisiana residents, add 4% sales tax).

Each issue contains two 5¼" disks.

Name _____

Street Address _____

City _____ State _____ Zip+4 _____

Phone # _____

❑ Discover ❑ Visa/MC ❑ AmEx ❑ Payment Enclosed (U.S. funds only).

Card # _____ Exp.Date _____

Signature _____

SOFTDISK PUBLISHING • P. O. Box 30008 • Shreveport, LA 71130-0008
318-221-8718 • **1-800-831-2694**

RU110

Loadstar: 64K required or Commodore 128 in 64 mode.

FOR ORDERS AND INFORMATION IN USA & CANADA CALL **1-800-759-6565**

ORDER HRS. MON-THURS, 9-7/FRI, 9-4/SAT-CLOSED/SUN, 9:30-6(ET)

WE INVITE CORPORATE & EDUCATIONAL CUSTOMERS.
DISCOUNTS FOR QUANTITY ORDERS.
RUSH SERVICE AVAILABLE!

MONTGOMERY GRANT

RUN 11/90

OUTSIDE USA & CANADA CALL **(718)692-0790**

OR WRITE TO: MONTGOMERY GRANT: MAIL ORDER DEPARTMENT
P.O. BOX 58 BROOKLYN, NY, 11230
FAX #7186923372 / TELEX 422132 MGRANT

RETAIL OUTLET PENN STATION, MAIN CONCOURSE
(Beneath Madison Sq. Garden) NYC, NY 10001
Store Hrs: MON-THURS, 9-7:00/FRI, 9-3, SAT-CLOSED, SUN, 9:30-7

ESTABLISHED 1967 — 23 YEARS OF EXPERIENCE

FOR CUSTOMER SERVICE CALL: (718)692-1148
CUSTOMER SERVICE HOURS: MON-THURS, 9am-5pm / FRI, 9am-3:00pm

NO SURCHARGE FOR CREDIT CARD ORDERS
WE INVITE CORPORATE AND EDUCATIONAL CUSTOMERS. DISCOUNTS FOR QUANTITY ORDERS / RUSH SERVICE AVAILABLE

TOLL FREE TECHNICAL SUPPORT

Certified check, Bank Check Money Orders, Approved P.O.s, Visa, Mastercard, Amex, Optima, Diners Club, Carte-Blanche, COD's & Wire Transfers accepted. Please call before submitting P.O.s. Non-certified checks must wait 4-6 weeks for clearance. Prices and availability subject to change without notice. Not responsible for typographic errors. Return of defective merchandise must have prior return authorization number or returns will not be accepted. Shipping & Handling additional. Second Day & Next Day Air available at extra cost. Canadian orders please call for shipping rates. APO/FPO orders please add 10% shipping & handling. (Over $1200 - 8%, over $3000 - 6%). All APO/FPO orders are shipped first class priority air. All orders can be shipped air express, Call for details. We check for credit card theft. DCA #800233

COMMODORE 64C COMPUTER

Includes:
GEOS Program,
Quantum Link Software,
1 Joystick (Necessary for GEOS - a $19.95 value)

$139.95

C= 64C

64C STARTER PACKAGE

C/64-C Computer w/Excellerator Plus FSD-2 Disk Drive
Geos Program 1 Joystick
Quantum Link Software

$249

64C COMPLETE PACKAGE

Commodore C-64/C Computer
Commodore 1541 Disk Drive
Commodore Color Printer
12" Monitor Geos Program
Quantum Link Software

$339

64C TEST PILOT PACKAGE

Commodore C-64/C Computer
Commodore 1541-II Disk Drive
Geos Program Ace Joystick
Quantum Link Software

$279

5 SOFTWARE PACKAGES INCLUDE
Advanced Tactical Fighter Infiltrator II Harrier Crazy Cars Tomahawk

Commodore 1571 Disk Drive **CALL**

Excellerator Plus FSD-2 Disk Drive **$119**

Commodore 1084 Color Monitor **$279**

Commodore 1581 Disk Drive **$199**

Commodore 1541II Disk Drive **$149**

Magnavox 13" RGB Composite Color Monitor **$225**

Commodore 1750 RAM Expander **CALL**

Magnavox 13" Color Composite Monitor #8702 **$174**

64C COLOR PACKAGE

Commodore C-64/C Computer
Commodore 1541 Disk Drive
Commodore Color Printer
Color Monitor Geos Program
Quantum Link Software

$449

PERIPHERALS *for Commodore!*

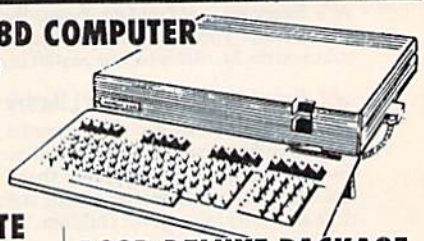
1700 RAM Expansion....$119.95	COMMODORE 1351 Mouse....$49.95
1764 Expansion Module....$129.95	XETEC S. Graphix Jr. Interface...$29.95
CARDCO G-WIZ Interface....$49.95	XETEC S. Graphix Sr. Interface...$49.95
C-64/C & 64C Power Supply....$29.95	XETEC Supergraphix Gold....$74.95
Excellerator Plus Power Supply.$39.95	XETEC Lt. Kernal 20MB Hard Driv.e for:
C-128 Power Supply....$79.95	C-64C, C-128 & C-128D....$549
C-1670 Modem....$79.95	XETEC 40MB Hard Drive for:
COMMODORE 1350 Mouse (128, 128D only)....$16.95	64C, 128, 128D....$699

COMMODORE 128D COMPUTER

w/Built-in Disk Drive

CALL

C= 128= D



128D COMPLETE PACKAGE

Commodore C/128-D Computer w/Built-in Disk Drive
Commodore Color Printer
12" Monitor

CALL

128D DELUXE PACKAGE

Commodore C/128D Computer w/Built-in Disk Drive
Magnavox RGB Color Monitor
Commodore Color Printer

CALL

WE CAN RECONFIGURE ANY OF OUR COMPUTER PACKAGES TO YOUR SPECIFICATIONS. CALL FOR INFORMATION!

AMIGA™

AMIGA 500

Amiga 500 Computer
Built-in 3.5" Disk Drive
Mouse System Software

$519

AMIGA 2000

A-2000 Computer w/Keyboard
1MB Expandable to 9MB
Built-in 3.5" Disk Drive Mouse
System Software

$1249

AMIGA 2000HD
$1799

AMIGA 500 *RGB COLOR PACKAGE*

Amiga 500 Computer
Built-in 3.5" Disk Drive
Mouse RGB Color Monitr
System Software

$669

AMIGA 3000

ALL MODELS IN STOCK

ALL AMIGA COMPUTERS & PERIPHERALS, HARD DRIVES, MEMORY EXPANDERS & ALL OTHER ACCESSORIES IN STOCK!

PRINTER SPECIALS

EPSON

LX-810	$189.95
LQ-510	$289.95
FX-850	$334.95

CITIZEN

GSX-200	$199.95
GSX-140	$304.95
Color Option Kit for GSX Printer	CALL

SANYO

PR-3000 Letter Quality Daisy Wheel Printer **$69**

STAR

NX-1000C	$189.95
NX-1000II	$159.95
NX-1000 Rainbow	$199.95
NX-1000C Rainbow	$227.95

BROTHER

HR-5 80 Column Thermal Printer **$59.95**

COMMODORE

MPS-1230	$189.95

PANASONIC

KXP-1180	$149.95
KXP-1191	$229.95
KXP-1124	$289.95
KXP-1624	$339.95

C O N T E N T S

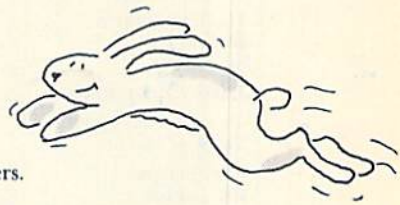
VOLUME 7, NUMBER 9 NOVEMBER 1990

PAGE 38

PAGE 29

COVER PHOTOGRAPHED BY LARRY DUNN

RUN (ISSN 0741-4285) is an independent journal not connected with Commodore Business Machines, Inc. *RUN* is published monthly, except July and September, by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. Phone 603-924-9471. Second-class postage is paid at Peterborough, NH, and at additional mailing offices. Canadian second-class mail registration number is 9565. Subscription rates in U.S. are $22.97 for one year, $34.97 for two years and $48.97 for three years. In Canada and Mexico, the one-year subscription rate is $27.97, with U.S. funds drawn on a U.S. bank. Foreign surface mail subscriptions are $42.97 for one year, and foreign air mail one-year subscriptions are $77.97, with U.S. funds drawn on a U.S. bank. *RUN* is nationally distributed by International Circulation Distributors. **Postmaster**: Send address changes to *RUN*, Subscription Services, PO Box 58711, Boulder, CO 80322-8711. (Canadian address changes to *RUN*, PO Box 1051, Fort Erie, Ontario, Canada L2A 5N8.)



FEATURES

18 PRINTER PRESCRIPTION *by Tim Walsh*
Answers to ten commonly asked questions about printers.

20 TWO WORTH NOTING *by Tim Walsh*
Here's the lowdown on the Star Micronics NX-2410 Multi-Font and Citizen 200GX printers.

***24 PRINTER CONTROLLER 64/128** *by William McLeod*
Get away from commonplace printouts! This program lets you use more attractive styles by making it easier to input printer control codes.

29 FREE SOFTWARE *by Stephen Dirschauer*
Virtually thousands of C-64 and C-128 public domain programs are available, from disk utilities to arcade games. And they're all free!

30 Q-LINK SEXTET *by Saul Cohen*
Six top-notch public domain programs available on QuantumLink.

***32 PLAQUE MAN** *by David Martin*
A twist on the classic arcade game, Pac Man, this program is filled with fun and fast action for the C-64!

***38 MACRO MANIA** *by Stephen Dirschauer*
These Basic commands and functions are yours at a single stroke of a key. For the C-64.

***42 MACHINE LANGUAGE MAGIC** *by Brandon Corfman*
Now your C-64 programs can make use of the speed of machine language code, without the hassle.

DEPARTMENTS

4 RUNNING RUMINATIONS
RUN's editors present 64 things to be happy about in the world of Commodore computing.

6 MAGIC
The *exclusive source* of hints and tips for performing Commodore computing wizardry.

8 NEWS AND NEW PRODUCTS
Recent developments and releases in the world of Commodore computing.

12 MAIL RUN
Readers question publishing costs and applaud ProTips.

14 SOFTWARE GALLERY *Reviews of:*

- Champions of Krynn
- Ghostbusters II
- TV Sports Football
- Heatwave
- X-Men: Madness in Murderworld

48 128 MODE *by Mark Jordan*
Check into these handy uses for Direct mode.

50 PROTIPS
The number of productivity tips keeps growing! Here are some for GEOS, RUN Shell, and more.

52 GOLD MINE *by Louis F. Sander*
Hints for a graphics role-playing adventure and some arcade action games are sure to improve your gaming strategies.

***54 GEOWATCH** *by William Coleman*
Save memory and disk space while creating stand-alone programs with geoBasic.

58 COMMODORE CLINIC *by Ellen Rule*
Answers to your questions about Commodore computing.

60 *RUN*'S CHECKSUM PROGRAM
Run it right the first time.

64 COMING ATTRACTIONS; LIST OF ADVERTISERS

*** If you'd rather spend your time concentrating on the upcoming holidays than typing in these listings, you'll find the programs on the November/December 1990 ReRUN disk. See the card facing page 48.**

VICE PRESIDENT/PUBLISHER
STEPHEN ROBBINS

EDITOR-IN-CHIEF
DENNIS BRISSON

MANAGING EDITOR
BETH S. JALA

SENIOR EDITOR
HAROLD R. BJORNSEN

TECHNICAL MANAGER
TIMOTHY WALSH

COPY EDITOR
PEG LEPAGE

CONTRIBUTING EDITORS
ELLEN RULE; JOHN RYAN
LOU WALLACE

ART DIRECTOR
HOWARD G. HAPP

DESIGNERS
ANN DILLON
LAURA JOHNSON

PRODUCTION SUPERVISOR
ALANA KORDA

ASSOCIATE PUBLISHER AND
NATIONAL ADVERTISING SALES MANAGER
KENNETH BLAKEMAN

SALES REPRESENTATIVE
NANCY P. THOMPSON

SALES REPRESENTATIVE
CLASS AD SALES
HEATHER PAQUETTE
603-924-9471

ADVERTISING COORDINATOR
MEREDITH BICKFORD

PUBLISHER'S ASSISTANT
MARY MCCOLE

ADVERTISING ASSISTANT/
CUSTOMER SERVICE REPRESENTATIVE
MARGOT SWANSON

WEST COAST OFFICE:

WESTERN STATES SALES MANAGER
GIORGIO SALUTI
2421 BROADWAY, SUITE 200
REDWOOD CITY, CA 94063
415-363-5230

CIRCULATION DIRECTOR
SUSAN M. HANSHAW
1-800-274-5241

ASSISTANT CIRCULATION MANAGER
PAM WILDER

MARKETING DIRECTOR
WENDIE HAINES MARRO

MARKETING COORDINATOR
LAURA LIVINGSTON

BUSINESS AND OPERATIONS ADMINISTRATOR
LISA LAFLEUR

Entire contents copyright 1990 by IDG Communications/Peterborough, Inc. No part of this publication may be printed or otherwise reproduced without written permission from the publisher. Programs published in this magazine are for the personal use of the reader; they may not be copied or distributed. All rights reserved. *RUN* assumes no responsibility for errors or omissions in editorial or advertising content. *RUN* does not assume any liability for advertisers' claims.

Commodore Magazine is a registered trademark of Commodore Business Machines, Inc.

RUNNING RUMINATIONS

64 THINGS COMMODORE USERS SHOULD BE HAPPY ABOUT

We just couldn't resist. One of the hot-selling novelty books on the market today is entitled *14,000 Things to Be Happy About*. It is one woman's lifelong list of people, places, things, events and remembrances that make her feel good.

There is much in the Commodore world that should bring a good feeling to Commodore owners. In case you've forgotten, or have been too busy to notice, here's a reminder from *RUN*'s editors about what's good about being a 64/128 user.

- the network of users' groups
- C-128D
- Commodore's built-in Basic
- 1581 disk drive
- sound and music features of the C-64/128
- fast-load cartridges
- QuantumLink and other online networks
- VIC chip
- Basic 7.0 and its sound, graphics and disk commands
- SID chip
- classic games developed for Commodore
- Commodore-compatible hard disk drives
- Kernal routines
- printer interfaces
- sprite graphics
- RAM expansion
- 128 mode
- numeric keypad
- 64/128 compatibility
- the many publications—books, pamphlets, newsletters, magazines, catalogs—available for this market
- 1351 mouse and other input devices
- kids using Commodores
- reset switch
- menu-driven programs
- 80 columns
- productivity applications
- 1571 disk drive
- function keys
- graphics characters
- abbreviated commands
- 16 colors
- ease of use
- 40/80-column dual monitors
- Peeks and Pokes
- 2 MHz
- GEOS operating system
- desktop publishing
- bulletin board systems
- *RUN* readers
- computer shows
- educational applications
- programming in Basic
- disk utilities
- surge suppressors
- laser printing
- bundled software
- keyboard overlays
- video RAM
- 2400 baud
- MS-DOS conversion programs
- high-quality joysticks
- the many developers, manufacturers and mail order houses who have supported, and continue to support, the Commodore market
- multi-function cartridges
- continued availability of Commodore 64
- modems
- games, games, games!
- bargain prices
- public domain software
- eight bits
- integrated software
- users' group newsletters
- virus-free environment
- 80-column word processing
- having your dream of owning a computer come true with the purchase of a C-64/128

ACCESSORIZE!

SAVE UP TO 70% EVERYDAY
ON COMPUTERS, SOFTWARE & ACCESSORIES

CALL 1-800/BUY-WISE EXT. 15 ▼ FOR FAX ORDERING 708/382-7545

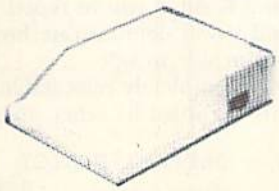
SPECIALLY PRICED
FUJI 5.25"
SINGLE SIDED/DOUBLE DENSITY DISKS!

SOLD IN LOTS OF 10

OUR LOW PRICE

29¢ each

100% HAYES COMPATIBLE EXTERNAL MODEMS



1200 BAUD
- Full or Half Duplex
- Auto Dial/Auto Answer
- RS232 Cable required (not incl.)

Mfr. Sugg. Retail $199.95

$54.95

2400 BAUD
- Tone and Pulse Dialing
- Built-in Speaker with Volume Control
- Buffer that Holds 40 Characters
- Uses RS232 Cable (not included)
- For All Computers

Mfr. Sugg. Retail $349.95

$87.95

NEW! 180CPS PRINTER
WITH NEAR LETTER QUALITY

- NEW! Rear Feed Reduces Paper Drag!
- Automatic Load & Paper Parking
- 8K Print Buffer
- Pressure Sensitive Controls
- LIFETIME WARRANTY on Printhead

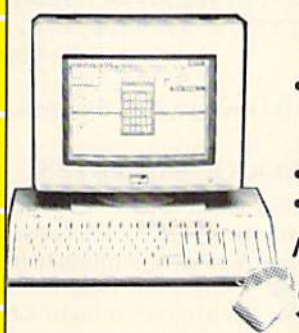
Mfr. Sugg. Retail $299.95

$149.95

CALL FOR YOUR FREE CATALOG!

THE AMSTRAD® PC20
AT $299, WHAT ARE YOU WAITING FOR?

FULL IBM XT® COMPATIBILITY!



- 512K RAM memory • 3.5" 720K disk drive • Monochrome graphics & CGA color graphics • Parallel & serial ports for printer or modem
- PC joystick port • Microsoft DOS™ Version 3.3 • Digital Research's GEM™ Desktop ("point & click")
- Digital Research's GEM™ Paint
- Microsoft compatible mouse

Mfr. Sugg. Retail $749.95

$299.95

Prices do not include shipping charges. Call to get your lowest delivered cost. We insure all shipments at no extra cost to you! All packages are normally shipped UPS Ground. 2nd day and overnight delivery are available at extra cost. We ship to all points in the US, Canada, Puerto Rico, Alaska, Hawaii, Virgin Islands and APO-FPO. Monitors only shipped in Continental US. Illinois residents add 6.5% sales tax. Prices and availability subject to change without notice. Not responsible for typographical errors or omissions. *Computer Direct will match any current (within 30 days) nationally advertised price on exact same items. Shipping and sales tax not included. Verification required.

Call 1-800/BUY-WISE (289-9473) Outside Service Area Call 708/382-5058

COMPUTER DIRECT, INC.
22292 N. Pepper Road
Barrington, IL 60010
"We Love Our Customers"

MAGIC

Clear your C-64 screen, reverse a New command, and find the value of any memory location.

By TIM WALSH

$5A6 GATE CLEAR 64

Clearing your C-64's screen needn't be dull. Add some excitement with Gate Clear 64. After you've typed in and saved the listing, run it, and it will demonstrate how Gate Clear 64 clears the screen from side to side.

Best of all, Gate Clear 64 is completely relocatable to any memory location not already occupied by other programs.

```
Ø REM GATE CLEAR 64 - JEFFREY PANICI
                                        :REM*169
1Ø PRINTCHR$(147):FORT=1 TO 1ØØØ:PRINT".";
   :NEXT                                :REM*249
2Ø FORI=49152TO49274:READZ:POKEI,Z:CK=CK+Z
   :NEXT                                :REM*7Ø
3Ø IF CK<>13883 THEN PRINT"ERROR IN DATA..
   .":END                               :REM*61
4Ø SYS 49152                            :REM*214
5Ø DATA 162,Ø,16Ø,41,169,64,133,251,169,32
   ,157,Ø,4,153,4Ø,4,157,8Ø,4           :REM*222
6Ø DATA 153,12Ø,4,157,16Ø,4,153,2ØØ,4,157,
   24Ø,4,153,24,5,157,64,5,153          :REM*211
7Ø DATA 1Ø4,5,157,144,5,153,184,5,157,224,
   5,153,8,6,157,48,6,153,88,6          :REM*168
8Ø DATA 157,128,6,153,168,6,157,2Ø8,6,153,
   248,6,157,32,7,153,72,7,157          :REM*45
9Ø DATA 112,7,153,152,7,157,192,7,232,136,
   32,179,238,32,179,238,32,179         :REM*43
1ØØ DATA 238,32,179,238,32,179,238,32,179,
    238,32,179,238,32,179,238,32        :REM*116
11Ø DATA 179,238,32,179,238,192,Ø,2Ø8,143,
    96,153                              :REM*32
```

—JEFFREY PANICI, SANDWICH, IL

$5A7 LETTER/NUMBER GUESS 64/128

This program lets you guess either a letter or a number within a range. When you run the program, it gives you ten chances to guess a letter from A to Z or a number from 1 to 100. The computer will tell you whether to guess higher or lower after each guess. Not challenging enough? Change the value of the variables X (the number of guesses) and N (the highest number) in line 20. The program automatically adjusts itself when you change the high number range.

```
Ø REM LETTER OR NUMBER GUESS 64/128 - CALV
  IN PRESLEY                            :REM*131
1Ø INPUT"{SHFT CLR}PLAY NUMBER OR LETTER (
   N/L)";Q$                             :REM*121
2Ø X=1Ø:N=1ØØ:T=1:IF Q$=""THEN 1Ø :REM*125
3Ø IF Q$="L"THEN N$="LETTER":M$="A-Z":N=26
   :W=65                                :REM*2Ø6
4Ø IF Q$<>"L"THEN:N$="NUMBER":M$="1 -"+STR
   $(N):W=1                             :REM*93
5Ø PRINT"{SHFT CLR}{2 CRSR DNs}{2 CRSR RTs
   }I'M THINKING OF A "N$" FROM " :REM*124
6Ø PRINT"{2 SPACEs}"M$". YOU SHOULD GUESS
   IT":PRINT"{2 SPACEs}IN"X"TRIES OR LESS"
                                        :REM*38
7Ø L=INT(RND(Ø)*N+W):PRINT:PRINT    :REM*99
8Ø AN$=STR$(L):IFW=65THENAN$=" "+CHR$(L)
                                        :REM*14
9Ø PRINT"{CRSR DN}{COMD 7}";T;:INPUT"WHAT
   IS YOUR GUESS";A$:IFA$=""THEN9Ø :REM*96
1ØØ IFW=65THENG=ASC(A$):IFG<65ORG>9ØTHEN9Ø
                                        :REM*142
11Ø IFW=1THENG=VAL(A$):IFG>NORG<1THEN9Ø
                                        :REM*6
12Ø IF G=L THEN 18Ø                     :REM*68
13Ø IF G>L THENPRINTTAB(3Ø)"{CTRL 2}LOWER"
                                        :REM*29
14Ø IF G<L THENPRINTTAB(3Ø)"{CTRL 2}HIGHER
   "                                    :REM*2Ø5
15Ø IF T>=X THEN 17Ø                    :REM*2Ø
16Ø T=T+1:GOTO 9Ø                       :REM*139
17Ø PRINT"{CRSR DN}THE ANSWER IS"AN$:GOTO1
   9Ø                                   :REM*224
18Ø PRINTTAB(3Ø)"RIGHT!!!":PRINT"YOU GUESS
   ED IT IN"T"TRIES"                    :REM*32
19Ø PRINTTAB(12)"PLAY AGAIN (Y/N)?"
                                        :REM*218
2ØØ GET P$:IF P$=""THEN 2ØØ            :REM*132
21Ø IF P$="N"THEN END                   :REM*71
22Ø IF P$<>"Y"THEN 2ØØ                  :REM*59
23Ø RUN                                 :REM*113
```

—CALVIN PRESLEY, BRIGHTON, MO

$5A8 FAST UN-NEW FOR C-64

At one time or another, every computer user has unintentionally entered the New command. This means having to reload a program—or worse, losing a program not previously saved. Unfortunately, most un-new utilities and techniques for recovering your lost program assume you've loaded one before working on a program.

Since most computer users don't bother loading an un-new utility before any other program, I wrote Auto-Un-New 64. Type in and save this program, then insert a formatted work disk and run Auto-Un-New 64. A file will be created with the name Unnew.

The next time you accidentally enter NEW, just place the work disk in the drive and type LOAD "UNNEW",8,1. The

Continued on p. 51.

DAMARK INTERNATIONAL, INC.

ORDER TODAY!

1-800-729-9000

THE "GREAT DEAL" CATALOG

cordata 386SX COMPUTER with VGA MONITOR

- 100% IBM compatible.
- Includes 14" VGA color monitor.
- 80386SX-16/8 MHz speed, zero wait state, upgradable to 20 MHz.
- One 3-1/2" 1.44 MB floppy disk drive.
- One 5-1/4" 1.2 MB floppy disk drive.
- 40 MB hard drive/ millisecond access time.
- 1 MB RAM on motherboard, expandable to 8 MB.
- Expansion slots: four IBM AT slots.
- Built-in VGA video support. Battery backed real time clock/calendar. • Two serial ports. • One parallel port.
- 80387SX-16 math co-processor socket.
- 101 key IBM style keyboard.
- Phoenix BIOS. • Model # CPC8248.
- Includes MS-DOS 4.0. • Dim.: 16"W x 18"D x 5"H.
- **One Year Warranty through Cordata.**
- **Factory New!**

* Does not include software shown on screen.

Mfr. Sugg. Retail: **$2,968.00**

DAMARK PRICE $1499.99

Item No. B-2416-143578
Insured Ship/Hand.: $49.00

KRAFT SYSTEMS INC. TRACKBALL

- Smooth moving Trackball mouse.
- 100% IBM compatible.
- Variable resolution up to 1150 D.P.I.
- Complete one-handed control.
- Easy to install; just insert disk and follow step-by-step menu driven instructions.
- Includes one 5-1/4" disk and one 3-1/2" disk.
- Includes Telepaint™ software with two 5-1/4" disks. • Microsoft compatible. Software driver included.
- System requirements: IBM or compatible PC, DOS 2.0 or higher.
- Includes 9 to 25 adapter cable for installation on any RS232 serial port.
- **5 Year Limited Mfr. Warranty!**
- **Factory New!**

Includes Telepaint™ Software

Mfr. Sugg. Retail: **$169.00**

DAMARK PRICE $49.99

Item No. B-2416-148684
Insured Ship/Hand.: $6.00

Qume SCRIPTEN™ LASER PRINTER WITH ADOBE® POSTSCRIPT® FOR IBM® & APPLE®

- 100% IBM compatible.
- 3 MB RAM.
- 1 MB ROM.
- Adobe controller.
- 68000 microprocessor.
- Resolution: 300 x 300 dpi. • 35 built-in typefaces including: Courier, Helvetica®, ITC Avant Garde Gothic®, ITC Bookman®, ITC Zapf Dingbats®, New Century Schoolbook®, New Helvetica Narrow®, Palatino®, Symbol®, Times®.
- Emulates the HP LaserJet™. • Type styles and sizes: Most characters can be printed from 2 pt. to 127 pt. Plain, bold, italic, underline, & combinations of these can also be printed. • Supplies include: toner cartridge, developer cartridge and drum (all included).
- Interface/system compatibility: AppleTalk (RS-422), RS232 serial port, baud rates (1200, 9600, 19200), centronics parallel, HP LaserJet Plus.
- Dim.: 20" x 17-1/4" x 15".
- Weight: 90 lbs.
- **90 Day Mfr. Warranty!**
- **Factory New!**

Mfr. Sugg. Retail: **$4,595.00**

DAMARK PRICE $1999.99

Item No. B-2416-150730
Insured Ship/Hand.: $69.00

KRAFT SYSTEMS INC. JOYSTICK W/CARD

Compute with the trouble-free operation of this three button Joystick from Kraft.

- Three button joystick.
- Compatible with IBM PC, XT AT, PS/2 models 25 & 30.
- Apple® II, II+, IIe, IIc, IIgs and compatible systems.
- Dual-axis trim controls for fine tuning your joystick to individual computers & software.
- Instant cursor response.
- Micro-touch gimbals for accurate cursor movement.
- Dual axis trim controls for easy operation.
- Center lock feature for free-floating or spring-centered mode.
- Includes adapter card that allows use of 1 or 2* joysticks (* with separate "Y" cable) and will operate on a system utilizing clock speeds from 4.77MHz. to 16MHz.
- Model #: 820302-6.
- **5 Yr. Limited Mfr. Warranty!**
- **Factory New!**

Mfr. Sugg. Retail: **$79.90**

DAMARK PRICE $29.99

Item No. B-2416-149310
Insured Ship/Hand.: $5.50

TOSHIBA 24-PIN DOT MATRIX PRINTER

- 24-pin letter quality printer.
- Print speed: 216 CPS draft; 72 CPS letter quality. 32K buffer.
- **Includes:** 12 Multi-Strike Ribbons PLUS 2 Font Cards–no choice on font cards received.
- Built-in rear tractor.
- Friction feed.
- Auto loading, single sheet guide for letterhead & cut sheets & friction feed.
- Front panel LCD display includes: type fonts, pitch, emulation, lines per inch, quiet mode and page length. • 360 x 360 graphics.
- Tractor feed and tear bar for continuous forms.
- IBM emulation. • Single or continuous feed paper loading.
- Parallel/serial interfaces included. • Model #: P321SL.
- Dim.: 16.3"W x 3.9"H x 15"D. • **1 Yr. Ltd. Mfr. Warranty!** • **Factory New!**

Includes printer ribbon & font cards.

Mfr. Sugg. Retail: **$1019.00**

DAMARK PRICE $299.99

Item No. B-2416-149468
Insured Ship/Hand.: $29.00

Sheetfeeder
• Model #: MS-17.

Mfr. Sugg.: **$349.00**

DAMARK PRICE $69.99

Item No. B-2416-149450
Insured Ship/Hand.: $6.00

GoldStar 286 AT COMPUTER with 14" HIGH RESOLUTION VGA COLOR MONITOR & 30MB HARD DRIVE

- 80286 microprocessor, 12.5/6.25MHz switchable.
- One MB RAM on motherboard, expandable to four MB.
- 30 MB hard drive.
- One 5.25" 1.22MB floppy drive.
- High resolution VGA monitor: 640 x 480.
- Socket for 80287 math co-processor.
- 16- bit VGA card; 80X600 resolution. • IBM compatible.
- 3 expansion slots—two 16-bit and one 8-bit.
- 1 serial port. • 1 parallel port. • PS/2 compatible 6-pin mouse port.
- Real time clock/calendar.
- Phoenix 286 ROM BIOS.
- AT style 101-key enhanced keyboard.
- Includes MS-DOS 4.01 with DOS Shell utilities and GW BASIC™.
- **One Year Mfr. Warranty!**
- **Factory New!**

FREE BONUS SOFTWARE: Spinnaker "Easy Writer" word processing, "Ace2" interaction game & "Splash" demo program. Also includes coupon to buy "Splash" at great savings!

Mfr. Sugg. Retail: **$2,293.00**

DAMARK PRICE $999.99

Item No. B-2416-149047
Insured Ship/Hand.: $49.00

FOR FASTEST SERVICE CALL TOLL FREE

1-800-729-9000

CUSTOMER SERVICE: 1-612-531-0082

QTY	DESCRIPTION	ITEM #	S/H/I	PRICE

NAME _____

ADDRESS _____

CITY _____ ST _____ ZIP _____

PHONE _____

DELIVERY TO 48 U.S. CONTINENTAL STATES ONLY

VISA ☐ MasterCard ☐ DISCOVER ☐ in MN add 6% Sales Tax

☐ Check/Money Order

SUB TOTAL	
in MN add 6% Sales Tax	
Total S/H/I	
GRAND TOTAL	

CARD NO. _____ EXP. DATE _____ SIGNATURE _____

B-2416

Send To: DAMARK INTERNATIONAL, INC., 7101 Winnetka Ave. N., Minneapolis, MN 55428-1619

Copyright 1990, DAMARK International, Inc. All rights reserved.

News and New Products

Explore Earth, die hard, join the Commodore users' movement, and play a full-color, C-128 80-Column mode game.

By HAROLD R. BJORNSEN

C-128 80-Column Mode Game

CHARLOTTE, VT—Silvasoft (PO Box 1006, Charlotte, VT 05445) has released an animated graphics adventure, written in Basic 8, for the C-128 in 80-Column mode. As Rodney, in **Maidstone Quest**, you've been chosen to undertake the quest for the Maidstone, an icon of power. The evil necromancer, Ganef, has stolen the icon and hidden it deep within the mines of the Grey Mountains. You must travel through 28 levels in search of clues and weapons you'll need to destroy Ganef and recover the Maidstone. An 80-column, RGB monitor, and either a C-128 with 64K VDC RAM and a 1571, or a 128D are required. $25 plus $3.50 s/h.

A Stable Situation

COSTA MESA, CA—The **Stable Owners Option Module** expands the styles and strategies of the C-64 version of Omni-Play Horse Racing. It also adds utilities that let you join the elite class of thoroughbred owners and assemble your own stable of claiming, allowance and stakes horses. You can hire jockeys, matching their skills against the competition, and enter them in races. $19.95. SportTime, 3187-G Airway Ave., Costa Mesa, CA 92626.

Now I Have A Machine Gun, Too!

MENLO PARK, CA—Based on last year's hit movie, **Die Hard** players assume the role of John McClane, the off-duty New York cop, who must race against the clock to rescue his wife and other hostages from terrorists occupying a high-rise building. As you defeat each terrorist, you'll obtain the guns and tools needed to win. It's available for the C-64 for $29.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025.

Planet Earth

WEST UPTON, MA—Edgeworth Software (PO Box 418, West Upton, MA) has

* EDGEWORTH SOFTWARE'S EARTH PROGRAM *
The earth in december (dawn view)
The sun is to the right of the screen
daylength= 14:38
nightlength= 09:22
time= 10:58
at 38S 140E
G=go H=halt F=fast S=slow X=exit

Edgeworth Software's Earth Program also contains help screens and a quiz.

expanded its **Earth Program** to a two-disk set for the C-64. Disk one generates rotating Earth graphics. By simulating sunlight and the Earth's tilt, it illustrates concepts such as the changing length of days and the four seasons.

By adding the optional disk two, users get extra screens, along with the ability to transfer graphics into some popular paint programs like RUN Paint. Disk one is priced at $19.90; disk two at $9.

Prevent Computer Crashes

RICHMOND HILL, ONTARIO, CANADA—**Stabilant 22** is an environmentally safe, nonconductive block polymer that, when applied to electromechanical contacts, helps prevent computer lockups and crashes that are caused by poor connections in the computer or keyboard. The heavy liquid improves conductivity and helps block the entry of contaminants. Price unavailable at press time. D. W. Electrochemicals, Ltd., 9005 Leslie St., Unit 106, Richmond Hill, Ontario, Canada L4B 1G7.

Computer Breakthroughs From "Science Digest"

MARS FLIGHT SIMULATOR—Planetary scientists at the Jet Propulsion Laboratory in Pasadena, California have produced a computer simulation of data sent back from NASA's exploratory spacecraft, *Viking*, as it orbited Mars. Scientists hope it renders a more complete picture of the planet than still photos can provide. The simulation "flies" viewers through Valles Marineris, a canyon that's as wide as the United States.

PERFECTLY SOUND SOUND—With the new knowledge of the physics of perfect sound that computer programs have given us, acousticians and architects are designing everything from great concert halls to quiet factories. One such computer program, developed at Cornell University, anticipates how any change in a room's design affects sound, allowing architects to evaluate different designs for sound clarity, volume and a number of other acoustic qualities.

Machine Language Doctor

NORTH ARLINGTON, NJ—Arlington Software (PO Box 916, North Arlington, NJ 07032) introduces **Code Shadow Symbolic Debugger** for the C-64. Its features help debug, test and analyze machine language programs. Symbolic capabilities provide assembling and disassembling code, program stepping and addresses referenced in command arguments. This non-copy protected program can use a RAM expansion unit to leave computer memory free. You can get your machine language programs in shape for $19.95.

Attention, C-64/128 Owners

An association of 64/128 users' groups is being formed to provide support for these 8-bit computers. The first meeting will be held during the World of Commodore/Amiga Show in Toronto from November 30 through December 31, 1990.

Some of the association's aims are to provide a united force to ensure support for the 64 and 128, to become a clearinghouse of public domain programs and newsletters and to increase buying power for 64/128 owners. For more information, write Dave Quinn c/o M.U.G., Box 2984, Stn. "A," Moncton, N.B., Canada E1C 8T8. ■

Micro EXPRESS INC.

TO ORDER CALL 1-800-726-7275 24 HOURS A DAY, 7 DAYS A WEEK
WE ACCEPT VISA, MASTERCARD, CHECKS & MONEY ORDERS . . .

SEND CHECK OR MONEY ORDERS TO:
MICRO EXPRESS INC.
P.O. Box 1678
ST CLOUD, MN 56302

- **FOR CUSTOMER SERVICE CALL (612) 252-6099** WEEKDAYS 9 A.M.–5 P.M. CST.
- CALL ABOUT NEW TITLES ARRIVING DAILY.
- CARD NOT CHARGED UNTIL WE SHIP.
- WE SELL ONLY TOP QUALITY PRODUCTS, NO SECONDS OR REJECTS.

Please read the following terms and conditions before placing your order with Micro Express. Orders with cashiers checks or money orders are shipped immediately on in stock items. Allow 3 weeks clearance on personal checks. Sorry No C.O.D.'s. Continental USA orders add $4.00 S & H fee; FREE shipping on orders over $100. AK, HI, APO, and FPO orders add $5.00 S & H fee. Canada and Puerto Rico orders add $7.50 S & H fee. No other international orders accepted. All monies must be submitted in U.S. funds. Minnesota residents add 6% sales tax on total order including S & H charges. Defective items are replaced with the same item if returned within 60 days of purchase. After 60 days please refer to your warranty included with your product and return directly to the manufacturer. Prices and availability are subject to change. All sales are final unless authorized by the Micro Express management. Please call us for more information and Thank You for your valued business.

ACCESS

Heavy Metal:	25.00
Mean Streets	25.00
World Class Leader Board	25.00
Famous Courses 1, 2 or 3	13.00 ea

ACCOLADE

Blue Angels Flight Simulator	18.75
Fast Break	18.75
Grand Prix Circuit	18.75
Heat Wave Boat Racing	18.75
Harmony	18.75
Jack Nicklaus Course Disk	9.75
J.N. Championship Courses of 89	9.75
J.N. Greatest 18 Holes	22.75
Serve and Volley	18.75
Steel Thunder	18.75
Strike Aces: Intl Bombing	26.00
Test Drive I	9.75
Test Drive 2: The Duel	22.00
Test Drive 2: Europe Scenery	9.75
Test Drive 2: Muscle Cars	9.75
Test Drive 2: Calif. Scenery	9.75
Test Drive 2: Super Cars	9.75
The Cycles	18.75

ACTIVISION

Battlechess	24.75
Beyond Dark Castle	18.75
Die Hard	18.75
Dragon Wars	28.75
F-18 Hornet	22.75
F-14 Tomcat	24.75
Face Off	19.00
Ghost Busters II	18.75
Grave Yardage	16.00
Last Ninja 2	22.75
Mondus Fight Palace	18.75
Neuromancer	25.00
Power Drift	20.00
Rampage	22.75

Artworx

Bridge 5.0	18.75
Linkwood Languages	15.75
Strip Poker	20.75
S.P. Male #2	13.00
S.P. Female # 1 or 3	13.00 ea
Tank Attack	18.75

BAUDVILLE Computer Products

Award Maker Plus	24.75
Award Maker Sports Libraries	16.00
Award Maker Educ. Libraries	16.00

BERKELEY SOFTWORKS

Desk Pack Plus	18.75
Font Pack Plus	18.75
Geos 128 (2.0)	43.75
Geos 64 (2.0)	38.75
Geo-Chart	18.75
Geo-Calc 64	32.75
Geo-Calc 128	43.75
Geo-Programmer	43.75
Geo-Publish	32.75

Broderbund

Bank St. Writer	32.75
Carmen San Diego Europe	24.75
Carmen San Diego U.S.A.	24.75
Carmen San Diego World	22.75
Carmen San Diego Time	25.00
Centauri Alliance	18.75
Curse of Babylon	16.00
License to Kill	13.75
Omni-Play Basketball	22.75
Omni Play Horse Racing	32.00
Pictionary	18.75
Print Shop	25.75
P.S. Companion	22.75
Sim City	18.75
Star Wars	18.75
Wings of Fury	19.75

CAPCOM

Pocket Rockets	9.75
Street Fighter	9.75
Tiger Road	18.00

CAPSTONE

Miami Vice	19.00
Search for the Titanic	22.00
Superman	19.00
Trump Castle/Casino Gambling	22.00

CINEMAWARE

Darkside	21.00
Deathbringer	19.75
Rocket Ranger	22.75
The Three Stooges	22.75
Total Eclipse	20.00
T.V. Sports Baseball	18.75
T.V. Sports Football	19.00

COSMI

Top 20 Game Combo Pack	10.00
Chomp	16.00

DATA EAST

ABC Monday Nite Football	24.75
Bad Dudes	18.75
Batman	18.75
Guerilla War	18.75
Ikari Warrior	9.75
Platoon	9.75
RoboCop	22.75
Untouchables	18.75
Vigilante	15.75

Davidson

Algeblaster	18.75
Math Blaster	18.75
Spell it!	18.75
Speed Reader II	18.75
Work Attack	18.75

DesignWare

Designasaurus	18.75
Eye of Horus	18.75
Spellicopter	18.75

DISNEY

Duck Tales	18.75

Micro EXPRESS

RETAIL SOFTWARE & PERIPHERAL GUIDE

Complete listings for Commodore, IBM, Apple, Mac & Amiga. Includes individual product description, applications & requirements. The perfect tool to take the guess work out of software shopping.
M.E.'s SUPER price $4.95
plus $1.00 S & H

DIGITAL SOLUTIONS

Pocket Filer II	18.75
Pocket Writer I	18.75
Pocket Writer II	31.25
Pocket Writer III	37.50

Electronic Arts

B.A.T.	26.00
Bard's Tale 3	26.00
Beyond the Black Hole	20.75
Blockout	18.75
Chessmaster 2100	26.00
Chuck Yeagers - AFT	9.75
Crack Down	22.00
Days of Thunder	25.00
Dragon's Lair	18.75
Ferrari formula One	21.00
F-16 Combat Pilot	22.75
Golden Ax	22.00
Indiana Jones Last Crusade	20.75
Iron Lord	26.00
Jordan vs Bird	20.75
Kings Beach Volleyball	20.75
Kings Bounty	25.00
Loopz	18.75
Madden Football	26.00
Might & Magic 2	26.00
Night Breed	18.75
Panzer Battles	27.50
Paperclip Publisher	34.50
Pipe Dream	20.75
Pro Tennis Tour	21.00
Puffy's Saga	19.75

ELECTRONIC ARTS Cont.

Quest Master	22.00
Sentinal Worlds	23.00
Skate Wars	18.75
Ski or Die	18.75
Starflight	26.00
Street Rod	18.75
Trivia Pursuit	25.00
Vegas Gambler	18.75

ELECTRONIC ZOO

Black Gold	18.75
Spherical	18.75

GAMETEK

Big Boggle	9.75
Jeopardy	9.75
Wheel of Fortune 1, 2, or 3	6.75 ea

HI TECH EXPRESSIONS

Print Power	9.75

MICROLEAGUE

M.L. Baseball 2	24.75

MASTERTRONICS

Barbarian	18.75
Clue	18.75
Double Dragon	14.00
Double Dragon II	24.00
John Elway's Quarterback	9.75
Monopoly	18.75
Oral Hershiser's Strike Zone	18.75
Risk	18.75
Scrabble	18.75
Shark Attack	18.75
Spot	18.75
War in Middle Earth	24.75

MICRO PROSE

3D Pool	19.00
Airborne Ranger	24.75
Destroyer Escort	25.00
Dr. Dooms Revenge	22.00
F-19 Stealth Fighter	28.75
Gunship	24.75
Keys to Maramon	18.75
Land Sea Air Trilogy	call
Pirates	28.75
Redstorm Rising	28.75
Rick Dangerous	19.00
Savage	19.00
Stunt Track Racer	19.00
Xenophobe	19.00

MINDSCAPE

Action Figher	18.75
Aussie Games	18.75
Gauntlet 2	19.00
Hostage	18.75
International Team Sports	18.75
Out Run	22.75
Sgt. Slaughters Mat War	18.75
Shinobi	18.75
Space Harrier	21.00

ORIGIN

Auto Duel	25.00
Knights of Legend	32.75
Omega	32.75
Space Rogue	32.75
Tangled Tales	18.75
Times of Lore	24.75
Ultima 4 or Ultima 5	38.75 ea
Ultima VI	43.75
Ultima Trilogy	38.75
Windwalker	24.75

PRECISION

Super Base 64	25.00
Super Base 128	31.25
Super Script 64	21.75
Super Script 128	21.75

SEGA

After Burner	22.75
Altered Beast	22.75
Turbo OutRun	25.00

Simon & Schuster Computer Software

Study Guide for SAT	18.75
Star Trek: Rebel Universe	22.75
Typing Tutor 4	24.50

SIR TECH

Wizardry Trilogy	32.75
Wizardry 5: Heart of Maelstrom	25.75

SOFTWARE SUPPORT

Maverick V5.0	22.75
Super Snapshot V4.0	24.50
Super Snapshot V5.0	52.00

SPECTRUM HOLOBYTE

Tetris	9.75

SPINNAKER

Alphabet Zoo	13.50
Better Working Word Publisher	20.00
Kids on Keys	10.00
Kidwriter	15.00
Reading 1- Peter Rabbit	15.75
SAT Complete	24.75

SSI

AD&D Champions of Krynn	25.00
AD&D Curse of Azure Bonds	25.75
AD&D Dragons of Flame	19.00
AD&D Hillsfar	25.75
AD&D Heroes of the Lance	20.75
AD&D Pool of Radiance	25.75
AD&D Secret of Silver Blade	25.00
AD&D War of the Lance	25.00
Buck Rogers Countdown to Dooms Day	25.00
DNG Master Asst. 1 or 2	20.75 ea
Dragon Strike	25.00
Overrun	31.75
Storm Across Europe	38.75
Star Command	26.00
Typhoon of Steel	31.75

subLOGIC

Flight Simulator 2	31.75
F.S. Scenery #7	19.00
Hawaiian Oddessy	18.75
Jet	17.00
Stealth Mission	31.50

TAITO

Arkanoid 2: Revenge of Doh	9.75
Operation Wolf	9.75
Qix	9.75
Rambo 3	9.75
Rastan	9.75
Renegade	9.75
Sky Shark	9.75

TIMEWORKS

Data Manager 2	13.75
Evelyn Wood Reader	13.75
Swiftcalc/Sideways	13.75
Word Writer 5	25.00
Word Writer 128	31.25

TITUS

Crazy Cars	15.75
F-40 Pursuit Simulator	18.75
Wild Street	call

ULTRA

Blades of Steel	18.75
CastleVania	18.75
Double Dribble	18.75
Metal Gear	21.75
Teenage Muntant Ninja Turtles	18.75

WEEKLY READER

Stickybear Series:	
ABC's (Pre - Kinders)	13.75
Math 1 (Grades 1-4)	13.75
Math 2 (Grades 4 & up)	13.75
Numbers (Pre-Kinders)	13.75
Opposites (Pre-3)	13.75
Reading Comp. (Grades 3-5)	15.75
Reading (Kinders-3)	13.75
Shapes (Pre-3)	13.75
Spellgrabber (1-3)	15.75
Town Builder (1-3)	15.75
Typing (All levels)	15.75

MISC.

C64 Power Supply	35.00
C128 Power Supply	69.95
EPYX 500 XJ Joystick	13.00
Icontroller	13.75
Final Cartidge III	45.00
Volk Model 6480 1200 Bd Modem	79.95

COMMODORE 64/128 • COMMODORE 64/128 • COMMODORE 64/128 • COMMODORE 64/128 • COMM

ORDER TOLL FREE 1-800-726-7275

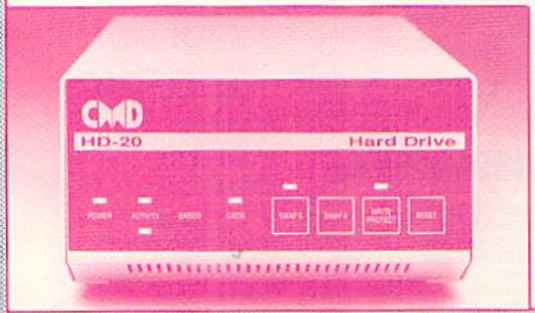
The BEST software, the BEST price, That's the bottom line!

ME MAIL IN 'BUCK-BACK' COUPON
Mail in check or money order with this coupon & save $1.00
*Include S&H fee, Minn. add 6%,
Expires 1-1-91

CMD • Your Memory Location • CMD

HD Series™ Hard Drives

THE NEW STANDARD IN 64/128 HARD DRIVES



The CMD HD series of hard drives for the Commodore 64 and 128 have been designed to provide the highest level of compatibility and performance. These drives incorporate the latest in SCSI technology with advanced circuit design to bring you the most features at an affordable price. CMD drives allow you to achieve the higher level of productivity you require to get the most from your existing software - today!

- **Compatible with GEOS™, CP/M™, BBS programs and most commercial software.**
- **3 1/2" SCSI technology for quiet reliable operation in a compact case about the size of a 1581.**
- **Built-in Commodore compatible DOS responds to all 1541, 1571 and 1581 commands.**
- **Up to 254 partitions in sizes ranging from 256 blocks to 65,280 blocks each.**
- **Built-in real time clock automatically time and date stamps all files.**
- **Compatible with Amiga, IBM and Macintosh systems for convenient upgrading.**
- **Connects easily to the serial bus, leaving ports open for use with cartridges, REU's and RAMLink.**
- **Supports all serial and JiffyDOS protocols, plus parallel interface for connection to RAMLink.**
- **Easy-to-use utilities allow backing up and copying files to and from 1541, 1571, or 1581 drives.**
- **Supports an unlimited number of true subdirectories which share all blocks within a partition.**
- **Built-in Q-Link software allows easy access to America's most popular 64/128 online service.**
- **External power supply avoids overheating and wear on computer power supply.**
- **Includes standard SCSI port and all utilities needed to expand the system (up to 4 Gigabytes).**

HD-20 $599.95 • HD-40 $799.95 • HD-100 $1149.95 • HD-200 $1499.95

SD Series SCSI Hard Drives

- Add-on drives for the CMD HD or any other SCSI interfaced computer such as the Amiga™, Macintosh™ or IBM™. SD series drives come mounted in our sturdy steel case and include an external power supply and connecting cable. SD drives also come equipped with a second SCSI port to allow chaining of additional SCSI devices.

SD-20 - $449.95 SD-40 - $549.95 SD-100 $899.95 SD-200 $1299.95

Lt. Konnector

- Increase the performance and compatibility of your LTK and CMD HD. The Lt. Konnector allows you to connect the two drives for greater capacity. **$19.95 ($14.95 with purchase of any HD or SD drive)**

JiffyMON

- A high performance Machine Language Monitor designed to work in conjuction with JiffyDOS. JiffyMON is loaded with useful features and can be used without exiting from BASIC. It also has a built-in drive monitor for easy access to drive memory. JiffyMON comes complete with a well documented user's manual and offers features just not found in other machine language monitors. **$19.95 + $1 S/H**

Serial Cables

- 30" high quality serial cables. **$3.95 + $1 S/H**

1541-II/1581 Replacement Power Supplies

These switching power supplies are the same heavy duty, cool running units found on the HD series hard drive and are much more reliable than the supplies issued by Commodore as standard equipment. They are also repairable and reasonably priced. **$49.95 + $6.00 S/H**

- **Supports CMD HD Series Hard Drives and RAMLink.**
- **1581 support.** Simplified partition selection.
- **Quick printer output toggle.** No more complicated command sequences.
- **Adjustable sector interleave.** Increase performance on hard-to-speedup software.

JiffyDOS™ Version 6.0

The Ultimate Disk Drive Speed Enhancement System

JiffyDOS 64 System - $59.95 JiffyDOS 128 System - $69.95

Each system includes computer Kernal ROM(s) and one drive ROM.
Please specify computer and drive model numbers and serial numbers when ordering.
Additional Drive ROMS - $29.95 each.

- **Ultra-fast multi-line serial technology.** Enables JiffyDOS to outperform Cartridges, Burst ROMs, Turbo ROMs, and Parallel Systems – without any of the disadvantages.
- **Speeds up all disk operations.** Load, Save, Format, Scratch, Validate, access PRG, SEQ, REL, USR & direct-access files up to **15 times faster!**
- **100% Compatibility Guarantee** - Guaranteed to work with all Software and Hardware
- **Uses no ports or extra cabling.** ROMs install internally for speed and compatibility.
- **Easy Installation.** No experience or special tools required for most systems.
- **Supports C64, 64C, SX64, C128, C128D, 1541, 1541C, 1541-II, 1571, 1581**
- **Can be completely switched out.** Returns you to a 100% stock configuration
- **Built-in DOS Wedge.** Plus 17 additional commands and convenience features.
- **Built-in two drive file copier.** Supports all file types and drive types.
- **REU support.** Fully supports Commodore REUs (RAM Expansion Units) under RAMDOS.
- **Enhanced text screen dump.** Auto-recognition of uppercase/graphics & lowercase.
- **Redefinable 64-mode function keys.** Easily redefine the keys to suit your specific needs.

• SUPER SAVINGS COUPON •

CMD HD-40 - $750
CMD HD-100 - $1100
CMD HD-200 - $1400

To receive these low prices (US & Canada), send in this coupon with your order. For ordering, shipping and credit card details see the adjoining box. Offer expires 12/31/90. Foreign orders add $100.00.

Ordering Information and Shipping Charges

HD and SD Hard Drives:	Continental US: $25.00 per drive (UPS ground), $35.00 (2nd-Day), $45.00 (Next-Day). Canada: $50.00 (Airmail). COD to U.S. only $4.00 addt'l charge. Foreign prices: 20Mb, $699.95, 40Mb, $899.95, 100Mb, $1249.95, 200Mb, $1599.95 Postage: $35.00
JiffyDOS & Lt. Konnector:	Add $4.50 per order (UPS ground), $8.50 (2nd-Day Air), plus $4.00 for APO, FPO, AK, HI, and Canada, or $14.50 for overseas orders. No additional shipping if ordered with any hard drive. COD's to US only - add'l $4.00
Tax:	MA residents add 5% sales tax.
Terms:	We accept VISA, MasterCard, Money Orders, C.O.D., and personal checks (allow 3 weeks for personal checks to clear). Credit card orders provide the following: Card holders name, billing address, home/work phone, card number, expiration date and issuing bank.

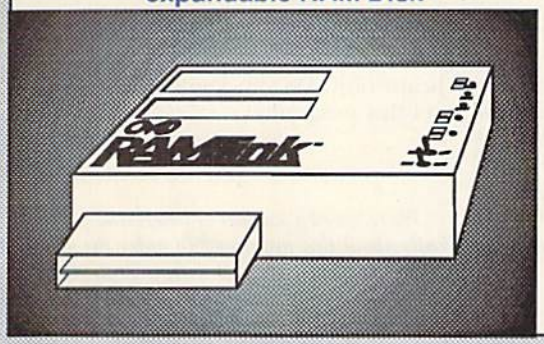
• WE VERIFY ALL CREDIT CARD INFORMATION AND PROSICUTE INDIVIDUALS ATTEMPTING TO PERPETRATE FRAUD •

Note: Prices and specifications subject to change without notice. Geos is a trademark of Berkeley Softworks, CP/M is a trademark of Digital Research, Commodore 64, Commodore 128, Commodore 1541, Commodore 1541-II, Commodore 1571, Commodore 1581 and Commodore RAMDOS are registered trademarks of Commodore International, Amiga is a trademark of Commodore-Amiga. Macintosh is a trademark of Apple Computer, IBM is a trademark of International Business Machines, Lt. Kernal is a trademark of Xetec Inc. and Fiscal Information Inc.

Now accepting advance orders
Call for details

RAMLink™

Power-backed REU interface and expandable RAM Disk



What is RAMLink?

RAMLink is a multi-purpose hardware interface designed to overcome the limitations of existing RAM expansion units (REUs). RAMLink delivers the performance and compatibility lacking in past REU's by incorporating CMD's proprietary RL-DOS and advanced features into a compact unit which allows most software to utilize Commodore 1700 series REU's, GEORAM, PPI's RAMDrive, and CMD's RAMCard as if it were a disk drive. Optional RAMCard installs internally and can be used alone or in combination with the storage of an external REU for a maximum capacity of 16 Megabytes.

- Supports Commodore 1700, 1764, 1750, Berkeley Softworks GEORAM and PPI's RAMDrive.
- Optional RAMCard allows RAMLink to be used as a RAM Disk with or without a separate REU. User Expandable from 1 Mb to 16 Mb using standard SIMMs.
- Pass-thru connector allows use of cartridge port peripherals such as utility cartridges.
- Reset, Disable, Direct Access mode and SWAP functions are all standard features.
- RAM port provides power back-up to REU's.
- Parallel port provides ultra-fast data transfer when connected to CMD HD series hard drives.
- Optional battery backup unit protects against power outages.

RAMLink (w/out internal RAM)	$149.95	RAMCard w/ (1 Mb)	$149.95
RAMLink w/ RAMCard (1 Mb)	$259.95	RAMCard w/(2 Mb)	$239.95
RAMLink w/ RAMCard (2 Mb)	$349.95	RAMCard w/ (3 Mb)	$329.95
RAMLink w/ RAMCard (3 Mb)	$439.95	RAMCard w/ (4 Mb)	$419.95
RAMLink w/ RAMCard (4 Mb)	$529.95	1 Mb SIMM (User Installed)	$100.00
RAMLink Battery back-up unit	$24.95	Parallel Cable for CMD HD	$14.95

Shipping: US: **$10.00** (UPS), **$18.00** (2nd day), COD add **$4.00** Canada **$20.00**

POWERFUL FEATURES MAKE RAMLINK AND RAMDRIVE USEFUL AND AFFORDABLE

- Allows vast amounts of commercial software, including GEOS, to access your REU as a high-performance RAM Disk.
- RL DOS performs up to 20 times faster than Commodore RAMDOS and provides full DOS command compatibility.
- Up to 32 1541/1571/1581 emulation or Native mode partitions.
- Separate power supply eliminates RAM data loss when turning off the computer; battery backup protects against power outages.
- Includes built-in JiffyDOS Kernal routines for high-speed disk access with JIffyDOS equipped disk drives.
- Software for copying files and complete disks included.

What is RAMDrive?

RAMDrive is a fresh new approach to RAM expansion for the Commodore 64 and 128. RAMDrive is a self contained battery backed cartridge with capacities of 512K, 1 Mb and 2 Mb. RAMDrive incorporates RL-DOS, an ultra-fast, easy-to-use operating system similar to the HD-DOS found in CMD HD series hard drives. This proprietary DOS allows various types of partitioning along with compatibility and speed unsurpassed by previous RAM Exapansion systems.

RAMDrive™

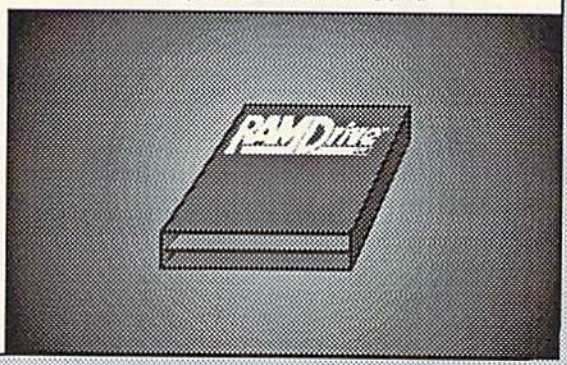
HIGH PERFORMANCE BATTERY BACKED RAM DISK CARTRIDGE

Designed and manufactured by PERFORMANCE PERIPHERALS Inc.

- Compatible with vast amounts of commercial software as an ultra-fast RAM disk.
- RL-DOS operates up to 20 times faster than Commodores RAMDOS.
- Power back-up eliminates the loss of of files upon powering down the computer while the battery protects data during transportation or power outages.
- Available in 512K, 1 Mb and 2 Mb models at incredibly low prices.
- DOS includes JiffyDOS Kernal routines for high speed disk access with JiffyDOS equipped disk drives.
- Software for copying and GEOS compatibility included.
- Reset switch allows computer reset without loosing data in RAMDrive.
- Disable switch allows RAMDrive to be disabled at any time.

RAMDrive w/512K $149.95 RAMDrive w/1 Mb $199.95 RAMDrive w/2 Mb $289.95

Shipping: US: **$7.50** (UPS), **$14.00** (2nd day), COD add **$4.00**, Canada **$15.00**. See Ordering and Shipping information elsewhere in this ad for credit card information.



CMD

Creative Micro Designs, Inc.

50 Industrial Dr., P.O. Box 646, East Longmeadow, MA 01028

Order line: 800-638-3263 **BBS:** 413-525-0148

Support: 413-525-0023 **FAX:** 413-525-0147

MAIL RUN

Readers question the cost of publishing, welcome RUN*'s new productivity column, and search for Commodore's support of education.*

LETTER TO THE PUBLISHER

I've subscribed to *RUN* since the first issue, but I now find myself continuing to use my C-128 without the support of, nor the need for, a magazine that is charging the same subscription price of $22.97 for 12 issues instead of prorating its new ten-issue subscription to about $19.

Other C-64/128-specific magazines are doing quite well at maintaining their advertisers. Why is *RUN* any different? The amount of money it costs to publish a magazine of this magnitude isn't that great. The true cost is about 47 cents per copy.

—DANNY P. ASH
BAKER, LA

RUN *Publisher Stephen Robbins replies, "Allow me to express my appreciation for your loyal and dedicated support of* RUN *magazine through the years.*

"I would like to take this opportunity to address the points you made in your letter.

"You will still receive 12 issues for the price of $22.97. I apologize for the lack of clarity surrounding this point. (See "Letter From the Publisher," RUN, *June/July 1990.)*

"Other Commodore magazines are not *doing well at maintaining their advertisers.* RUN *is the only publication remaining that serves the informational needs of the 8-bit user base.* Compute!'s Gazette *has ceased publication, and* INFO *magazine has refocused its coverage solely to target the Amiga market.*

"It is true that it costs about 47 cents to manufacture a single copy of RUN. *However, manufacturing costs are exclusive of staffing, postage, renewal notices, artwork, film development and stripping charges, equipment, telephone and fax charges, circulation management, fulfillment house costs, corporate administrative, legal and accounting services, and so forth.*

"Our printer, Brown Printing Company, who also prints Sports Illustrated *and* Time, *represents one of the largest national printers and always keeps abreast of the latest technology in printing/binding, enabling* RUN *to maintain the lowest subscription rate possible.*

"The corporate philosophy of RUN*'s parent company, International Data Group, is first and foremost to serve the informational needs of its readership.* RUN *has attempted in every way to deliver a good value for the product. Granted, the magazine has decreased in size, yet the number of editorial pages has not been affected as greatly as one might expect.*

"In order to continue publishing, RUN *must rely on its readership for financial support. It's up to the reader to decide if he is getting a fair and equitable value for the money spent in subscription fees. The magazine will not survive beyond the next few years unless its readership feels the need for the information and is willing to pay for it."*

PROTIP ACCOLADES

Someone is reading my mind. What a *great* idea for a new column! After you've compiled enough material, the ProTips column should be published in book form.

I have had the same problem with geoCalc 64 that ProTip submitter Geoffrey Sullivan described—and solved—in your August/September issue of *RUN*. Keep the column coming; I need the helpful hints it provides.

—TERRY W. BASS
HELENA, MT

Thanks for the accolades, Terry. Many wrote in appreciation for the new column. Readers who have any undocumented, clever or creative tips they use with their own commercial productivity programs—especially RUN*'s own programs—may submit them to ProTips, RUN Magazine, 80 Elm St., Peterborough, NH 03458. Be sure to state which version (if any) of a program your tip is for. If a tip is published, you'll receive a check for $5.*

—EDITORS

PROTIP QUERY

Your ProTips column in the August/September *RUN* included a tip for the Flex File 128 database program. I've searched all the ads in magazines and catalogues and have called several mail order houses, but no one seems to have heard of it. Do you know where I can get this program?

—F. C. HORN
JEKYLL ISLAND, GA

We received a number of letters and phone calls about this program. To order the Flex File 128 database, call 1-800-762-5645, or write Cardinal Software, 13646 Jefferson Davis Highway, Woodbridge, VA 22191.

—EDITORS

EDUCATION AND COMMODORE

It seems to me that Commodore, and perhaps *RUN*, have forgotten the enormous educational use of the C-64. I would like to see *RUN* provide more coverage of the educational market, with some success stories. This market, which is rejuvenated every year with new recruits, is an ongoing source of interest that you should explore.

—GRAHAM HODGKIN
DAGLISH, WESTERN AUSTRALIA

See the RUNning Ruminations column in the October 1990 issue for an editorial on Commodore and education and, in the same issue, the article, "Kidware Hit Parade," which describes RUN*'s reviewers' favorite educational packages.*

—EDITORS

WORLD OF AMIGA SHOW

I went to the World of Commodore show with high expectations. Boy, was I disappointed! All I saw at each table were Amigas running software. I was amazed at what the Amiga could do, but not to the extent that I'd ditch my C-64 system, considering that all my software and hardware would then become useless.

—DAVID M. FRIEDMAN
LARCHMONT, NY ■

A CALL TO READERS

Send your letters to Mail RUN, 80 Elm St., Peterborough, NH 03458. RUN *reserves the right to edit letters for style, clarity and space.*

BRiWALL BRiWALL

P.O. Box 129/58 Noble Street
Kutztown, PA 19530

24 Hour FAX Line 1-215-683-8567
Customer Service 1-215-683-5433
Technical Support 1-215-683-5699

1-800-638-5757

Outside the USA (1-215-683-5661)

VISA MasterCard

PLEASE COME VISIT US!
Monday - Friday 9AM-6PM EST
Saturday 9AM-12 Noon EST

ACCESSORIES

Apro Extender 64 User Ribbon	$19
Aprospan 4 Slot Cartridge Holder	25
Covers	call
Final Cartridge V3	49
Icontroller	16
Joysticks	call
Leroy's Cheatsheet 64 each	3
Leroy's Cheatsheet 128 each	7
Lightpen-Model 170c	69
Lightpen-Model 184c	39
Minimodem C (1200 Baud)	59
Minimodem C 2400 Baud	79
Mouse M3 (1351 substitute)	39
Paper	call
Passport MIDI w/Tape & Drum sync	150
Power Supply - C128 -Repairable	55
Printer Intfce G-Wiz	29
Printer Intfce Super Graphic Junior	42
Printer Intfce Super Graphic GOLD	89
Quick Brown Box 128K	**145**
Quick Brown Box 256K	**189**
RAM Expander 1700 (128K)	90
RAM Expander 1750 clone	179
RAM Expander 1764 (refurb)	105
RS232 Deluxe Interface	39
Ribbons	call
Ribbon Renew - Re-Ink w/no Equip	5
Video RAM 64K Cartridge (FULL)	50

BOOKS

1541 Repair & Maint. Handbook	$16
1541 Troubleshoot & Repair Guide	17
1571 Internals+	17
500 C128 Questions & Answers	15
C128 Internals+	17
C128 Tips & Tricks	17
C128 Troubleshooting & Repair	17
C64 Troubleshoot & Repair Guide	17
CSM Prog Protection Manual 1	24
CSM Prog Protection Manual 2	29
GEOS Inside & Out+	17
K Jax Book Revealed 3	23
Lou Sanders Tricks & Tips	16
Superbase The Book 64/128	15
Twin Cities 128 Compendium #1	15
+means that a disk is available	call

GENERAL BUSINESS

CMS Accounting/128	129
CMS Inventory Module 128	53
Data Manager 64	17
Fleet System 4	52
Fontmaster 128 w/Speller	30
Fontmaster II/64	29
KFS Accountant 128	109
Leroy's Label Maker	24
Microlawyer	39
Paperclip 3	39
Paperclip Publisher	39
Partner 128	33
Pocket Dictionary 64/128	10
Pocket Filer 2	29
Pocket Planner 2	29
Pocket Superpak 2 (Digital)	67
Pocket Writer 3	46
Sideways 64/128	17
Superbase 128 - Version 3	39
Superbase/Superscript/book 128 pak	69
Superbase/Superscript/Book 64 pak	59
Swiftcalc 128 w/sideways	33
Swiftcalc 64 w/Sideways	17
Technical Analysis System 64	29
Word Writer 3/128	33
Word Writer 5/64	**30**
Write Stuff 128 w/spellchecker	27
Write Stuff 64 w/spellchecker	22
Write Stuff Busnss/Legl Templates	10

EDUCATION

Big Bird's Special Delivery	$9
Calculus by Numeric Methods	27
Counting Parade	6
Designasaurus	20
Easy Sign	17
Evelyn Wood Dynamic Reader	17
Grover's Animal Adventure	9
Jungle Book (Reading 2)	19
Linkword:German	19
Linkword:French 2	19
Linkword:Spanish	19
Math (First Men on Moon)	19
Mavis Beacon Teaches Typing /C64	30
Mental Blocks	10
Morse Code Trainer	5
Numbers Show (The)	10
Peter Rabbit (Reading 1)	19
SAT Complete (Hayden SAT Prep)	26
Sky Travel	33
Stickybear ABC'S	27
Stickybear Math 1	27
Stickybear Numbers	27
Stickybear Reading 1	27
Stickybear Typing	37
Where in Europe Carmen Sandiego	27
Where in Time Carmen Sandiego	**27**
Where in USA is Carmen Sandiego	27
Where in World Carmen Sandiego	25
World Geography	**20**

ENTERTAINMENT

AD&D - Champions of Krynn	$27
AD&D - Dragons of Flame	**21**
AD&D - Heroes of the Lance	22
AD&D - Secret of Silver Blade	**27**
AD&D - War of the Lance	27
Battle Chess	29
Blue Angels	20
Blockout*	**21**
C128 80 Col Fun & Games Pack	45
C64 Games Spectacular Package	21
Centauri Alliance	**20**
Chessmaster 2100	25
Clue: Master Detective	22
Double Dragon II	23
Double Dribble	**20**
Dragon Wars	30
Duck Tales: Quest for Gold	**20**
F14 Tom Cat	27
F/16 Combat Pilot	**24**
Flight Simulator II	33
Forgotten Worlds	20
Ghost Busters 2	**20**
Grave Yardage	17
Heat Wave: Offshore Racing	20
Hole In One - Miniature Golf	20
Iron Lord	27
Jack Nicklaus Golf	23
John Madden Football	27
Knights of Legend	33
Mean Streets	26
MicroLeague Baseball II	**27**
Monday Night Football	26
Mondu's Fight Palace	**20**
Omega	33
OmniPlay Horse Racing	23
Panzer Battles	27
Power Drift	**20**
Prime Time Hits Vol1	**20**
Prime Time Hits Vol2	**20**
Pro Tennis Tour	21
Puffy's Saga*	**21**
Questmaster	**24**
Red Storm Rising	30
Scrabble	21
Sentinel Worlds	24
Sex Vixens From Space	20
Shoot 'Em Up Kit	**10**
Sim City	20
Skate Wars	**21**
Ski or Die	**21**
Sports Collection	23
Starflight	27
Street rod	**27**
Strike Aces	**27**
TV Sports Football	21
Teenage Mutant Ninja Turtles*	**20**
Test Drive 2: European Challenge	10
Test Drive 2: Muscle Cars	10
Test Drive 2: The Duel	19
The Cycles: Grand Prix Racing	23
The Game of Harmony	20
Top 20 Solid Gold	10
Thud Ridge	24
Ultima Trilogy (1,2,3)	39
Ultima V	39
Wheel of Fortune 2	12
Wheel of Fortune 3	**8**
Windwalker	27
Wings of Fury	**20**
Wizardry - Heart of Maelstrom	27
Wizardry Trilogy	26

GEOS RELATED

Becker BASIC - GEOS	$35
Desk Pak Plus - Geos	22
FontPak Plus -GEOS	22
GEOS 64 v 2.0	39
Geocalc	35
Geochart	22
Geopublish 64	39
Geos 128 V2.0	45
Bible Search NIV-New T.	25
Bridge 5.0	20
Dream Machine Analyze/64	19
Family Tree C64/C128 and LDS	39
Great War	15
Tarot 128	15

UTILITIES/LANGUAGES

1581 Toolkit V2/ Dos Ref	$29
Basic 8-How to Get the Most Out of	17
Basic Compiler/128	39
Basic Compiler/64	29
Big Blue Reader V3.1 (64/128)	32
Bobsterm Pro 128	42
CP/M Kit	22
CSM Newsletter Compemdium	29
Cobol 128	29
Digitalker 128	20
FasTrac/128	**23**
Gnome Kit 64/128	29

WE NOW CARRY JiffyDOS!

JiffyDOS v6.0 64	**$50**
JiffyDOS v6.0 128	**$60**

Please specify computer and drive when ordering

Call for CMD Hard Drives Starting as low as $589 for 20MB!

Gnome Speed Compiler 128	29
Kracker Jax Super Cat	22
Kracker Jax Vol 1-7 + Shotgun2	27
Maverick V5.0 Copier	**29**
Merlin 128	45

WHY CHOOSE BRIWALL?

WE'RE MAILORDER SPECIALISTS!

SATISFACTION GUARANTEED!

- In-House Technical Support
- A No-surprises Shipping Policy
- Our FIFTH Year in Business
- No Surchage for Charge Orders
- No Holding of Personal Checks
- A Fair Return/Exchange Policy

CREATIVITY/GRAPHICS

Animation Station	$65
Award Maker Plus	29
Billboard Maker	25
Business Card Maker	29
Cadpak 128	39
Cadpak 64	29
Certificate Maker	14
Colorez 128	12
Computer Eyes	105
Doodle	29
Flexidraw 5.5	25
Home Designer Circuit Symbol Lib	10
I Paint	**29**
Icon Factory	25
Label Wizard	21
Newsroom	14
Photo Finish	19
Poster Maker 128	24
Printmaster Plus	25
Printshop	30
Screen F/X	25

PERSONAL

Bible Search KJV-New T.	$20
Bible Search KJV Old&New T	60
Bible Search NIV Old&New T	65
Merlin 64	35
Protolinc BBS 128	29
Prototerm 128	12
Super 81 Utilities 128 or 64 each	12
Super Aide 64	25
Super C 128 or 64	45
Super Disk Librarian 128 or 64 each	19
Super Disk Utilities 128	25
Super Pascal 128 or 64 each	45
Super Snapshot V5.0	59
Super Snapshot V5.0 w/128 disble	65
SysRES Enhanced	16

We maintain an enormous inventory of Commodore 64 and 128 software. If you don't see what you want, **CALL!**

Titles marked with * were not yet available when the ad was prepared. Please call for availablilty. Titles in **BOLD** are new items

1541/1571 DRIVE ALIGNMENT

This excellent alignment program is a must-have for every Commodore owner. Easy to use, it helps you to align your drive so that it runs just as if it were new! The simple instructional manual and on-screen help prompt you through the alignment procedure and help you adjust the speed and head stop of your drives. It even includes instructions on how to load the alignment program when nothing else will load!

Don;t be caught short! We get more Red Label orders for this program than any other program we sell. Save yourself the expense! Order now, keep it in your library, and use it often!

Works on the 64, 128 and SX64 for the 1541, 1571, 1541-II and compatible third party drives.

STILL ONLY $25

LOOKING FOR PROGRAMS MADE JUST FOR YOUR 128?

NEWS MAKER 128
Desktop publishing for the 128D (or the 128 with 64K video RAM upgrade). **ONLY $17**

SKETCHPAD 128
Complete drawing system for the Commodore 128 and 1351 mouse. **JUST $17**

SPECTRUM 128
80-column paint package for the 128D (or 128 with 64K video RAM upgrade.) **ONLY $21**

HOME DESIGNER 128
Professional object-oriented CAD package for the Commodore 128. **OUR PRICE ONLY $39**

BASIC 8 Package
Here's a special deal on a complete Basic 8 library. You get both Basic 8 and the Basic 8 Toolkit at one low price. **OUR PACKAGE PRICE $35!**

SHIPPING POLICY: ALL ORDERS received before 3PM EST will normally be shipped within 2 business days. All UPS shipments are sent Signature Required/No Driver Release. Add the following shipping charges to your Total software order.
UPS: Ground $4.50 (cont. USA ONLY); Air/Rush $8.00 (includes Puerto Rico/Hawaii); Overnight $12.00 + $2.50 PER ITEM (must be received by 12 Noon.)
Priority Mail: USA $4.50 (Includes APO/FPO); Canada/Mexico $7.00; Other Foreign $4.00 Handling + Actual Shipping + Insurance.
HARDWARE: Shipping charges for all hardware are $4.50 handling + actual shipping charges + insurance.

ORDERING INSTRUCTIONS: For your convenience, you can place a phone order 24 Hours/7 days a week on our TOLL-FREE LINE 1-800-638-5757. Outside the USA, please use (215) 683-5433. Price, availability, and compatibility checks are also welcome on our order line, Monday thru Friday, 9:30AM - 4:30PM EST. AFTER HOURS Orders Only Please! When placing an order, please specify your computer model, home & daytime telephone number, shipping address, charge card number, expiration date and name of bank.

ACCEPTED PAYMENT METHODS: We gladly accept Personal Checks (no holding), Money Orders, VISA, MASTERCARD, School Purchase Orders, or COD ($4.00 additional -- for established Briwall Customers ONLY). All checks must be in US Dollars and drawn on a US bank. There is no surcharge for credit cards and your card is not charged until we ship!
RETURN POLICY (for Non-Entertainment software and Accessories ONLY): We have a liberal return policy to better service your needs. If within 15 days from the time you receive an item, you are not satisfied with it for any reason, you may return it to us for either a refund, exchange, or open credit. REFUNDS ARE SUBJECT TO A 20% RESTOCKING FEE PER ITEM RETURNED ($10.00 MINIMUM PER ITEM.) **EXCHANGES/OPEN CREDITS** will gladly be issued for the full purchase price of the item. **DEFECTIVE** items, Entertainment software, Hardware items and Special Order items will be repaired or replaced with the same item only.
TECHNICAL SUPPORT Call (215) 683-5699, Monday - Friday, 9am - 5pm EST.
We do our very best to help you with your product selections before you order, and after you receive your product. General questions, such as price, compatibility, etc., will be handled by our order staff at the time you place your order. BUT, if you have specific, detailed questions about a product you will get the most help from our Technical Support Line.

SOLID PRODUCTS . . . SOLID SUPPORT

SOFTWARE GALLERY

Sequels—a role-playing game and a "spirited" adventure—and sports—boat racing and football—top this month's lineup.

By BETH S. JALA

CHAMPIONS OF KRYNN ..... A–

Lots of Combat Action Will Test Your Survival Skills In this Fantasy Sequel

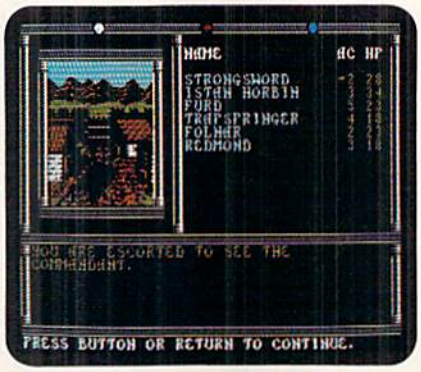
When the great War of the Lance ended, Takhisis was barred from the world of Krynn and her dragon legions were shattered. Never again would the Dark Queen's magic transform dragon eggs into man-like dragon fighters—or so it was believed! Your party of six volunteers had barely begun a patrol of Northeast Ansalon when they encountered rumors about an arch-mage draconian named Myrtani, who planned to create a new mutant horde.

Champions of Krynn reflects considerable refinement in the computerization of dungeon and dragon games. Unlike SSI's earlier game, Pool of Radiance, Krynn offers a single strong scenario, a clear-cut ending and even a victory celebration. To support the larger, more involved story line, you'll find on-screen text that supplements the numerous Journal and Tavern Tale readings.

Most of the action is set in the outposts, streets, dungeons, temples and towers of six cities. There you get a 3-D, forward view with coordinates and optional top-down display to aid in mapping. Aside from the fun of discovery, explorations yield assorted shops, taverns, treasures, valuable information and the inevitable hostile encounters.

If mystery, puzzles and a worthy quest are the "spice" of adventuring on Krynn, then the "meat and potatoes" is monster bashing. This translates into an on-going concern for building character attributes, and the chance to try out your party in some of the very best tactical combat available.

One of the challenges in Krynn is maneuvering individual characters against a variety of computer-directed adversaries. Beginning heroes tend to encounter goblins, bugs and other weakies, so even new players can easily learn the ropes. The real fun begins with parties of high-level warriors backed by dragons and evil spell casters!



Command a party of six to victory in Champions of Krynn.

Although supplied with extensive, illustrated manuals, Krynn's documentation is guilty of some important omissions. Keyboard input works best during combat, yet nowhere is the key pattern shown. (It's 1–8 clockwise, top number keys only.) There's also no reference to the game's initial "Disable Fastloader? (Y/N)" prompt. (Respond No to use the program's fastloader software; Yes to use a cartridge. In several timings versus a low cost cartridge, the software proved notably faster. With no cartridge, you've got a game so slow, it's almost unplayable.) Finally, remember to disconnect or turn off drive 2; otherwise, the game will eventually crash.

With colorful, partially animated graphics and good sound, Krynn follows through with absorbing, well-planned combats and a long-playing, multi-branching scenario spanning six disk sides. Expect a solid challenge to your wits as well as your sword arm when you lead the Champions of Krynn! *(Strategic Simulations, Inc.; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$39.95.)*

—JEFF HURLBURT
HOUSTON, TX

REPORT CARD

A Superb!
An exceptional program that outshines all others.

B Good.
One of the better programs available in its category. A worthy addition to your software library.

C Average.
Lives up to its billing. No major hassles or disappointments here.

D Poor.
This program has some problems. There are better on the market.

E Failure.
Many problems; should be deep-sixed!

GHOSTBUSTERS II ..... A–

If Spirits Invade Your Computer Screen, "Who Ya Gonna Call. . .Ghostbusters!"

After only five years of relative peace, New York City again finds itself in deep supernatural trouble. And once more, Peter, Egon, Ray and Winston must answer the call, this time in Ghostbusters II.

Inspired by the hit movie, the software has three major segments. In the first, you use the keyboard and a joystick to control a ghostbuster who dangles from a rope. His mission is to descend to the bottom of a shaft and take a sample of mood slime that flows in a subterranean river.

Making your quest hazardous are spectral hands that suddenly materialize and try to saw through the rope; meanwhile, other evil spirits strive to steal all your ghostbuster's strength and ►

Software Discounters International

WE ARE THE #1 SOFTWARE SOURCE FOR THOUSANDS OF COMPUTER OWNERS

If you've never shopped with us before, now is the time to find out why so many valued customers have!

- Speedy Delivery
- Deep Discounts
- Astronomical Selections
- Free shipping on orders over $100
- No surcharge on MC/VISA
- Overnight & 2 day shipping available

Broderbund

The Hilarious best selling quick draw game is now on computer. Built in drawing program. 1 to 4 players.

PICTIONARY
List $29.95 **SDI Price $19**

EPYX

A radical value just in time for Christmas. 4 games for the price of 1! Winter games, Summer games 2, Calif. games, World games.

EPYX GAME SERIES
List $34.95 **SDI Price $23**

HI TECH EXPRESSIONS

Design and print your own personalized cards, banners, posters and more featuring the Jetsons and Flintstones.

JETSONS/FLINTSTONES PRINT KIT
List $19.95 **SDI Price $14**

ABACUS BOOKS
GEOS Inside & Out $13
GEOS Tricks & Tips $13
ABACUS SOFTWARE
Cad Pak $25
Super C64 or 128 ... $39 Ea.
Super Pascal 64 or 128.$39 Ea.
ACCOLADE
Blue Angels Flight Sim ...$19
Harmony $19
Heat Wave Boat Racing...$19
Jack Nicklaus Golf $23
JN Golf 1990 Courses...$9.88
JN Golf Champ Courses $9.88
JN Golf Int'l Courses .. $9.88
Steel Thunder $14
Strike Aces $19
Test Drive 2: The Duel ...$23
TD 2: Europe Scenery...$9.88
TD 2: Muscle Cars $9.88
TD 2: Calif Scenery $9.88
TD 2: Super Cars $9.88
ACTIVISION/GAMESTAR
Battlechess $25
Crossbow $19.88
Die Hard $19
Dragon Wars $29
F14 Tomcat $25
Face Off Hockey $19
Ghostbusters 2 .....$19
Mondu's Fight Palace $19
Power Drift $19
AMERICAN EDUCATIONAL
US History $12
World History $12
ARTWORX
Bridge 5.0 .....$19
Strip Poker $21
S.P. Data Male #2 .....$14
S.P. Data Female #1 or 3...$14
BERKELEY SOFTWORKS
Geos 128 2.0 .....$44
Geo-Calc 128 .....$44
Geo-File 128 .....$44
Geos 64 (2.0) $39
Desk Pack Plus 64 .....$19
Font Pak Plus 64 .....$19
Geo-Chart 64/128 .....$19
Geo-File 64 .....$33
Geo-Programmer 64/128 ..$44
Geo-Publish 64/128 .....$33
BRODERBUND
Carmen S.D. - Europe ...$25
Carmen S.D. - Time $25
Carmen S.D. - USA $25
Carmen S.D. - World $23
Centauri Alliance $19
OmniPlay Basketball $23
OmniPlay Horse Racing...$23
Pictionary $19
Print Shop $26
P.S. Companion $23
P.S. Graphics Holiday $16
Sim City $19
Wings of Fury $19
CINEMAWARE/SPOTLIGHT
T.V. Sports Football $21
Dark Side $21
Death Bringer $21
Speedball $21
Total Eclipse $21
CMS
General Acct.
64 or 128 ..... $119 Ea.
Inventory 128 .....$49
COSMI
Chomp! $16
Top 20 Solid Gold $10.88
DATA EAST
ABC Mon Nite Football .. $25
Bad Dudes $19
Batman The Movie $19
RoboCop $23
Tag Team Wrestling $14
DAVIDSON
Algeblaster $19
Math Blaster $19
Spell It $19
Word Attack $19
DESIGNWARE
Body Transparent $19
Designasaurus $19
DIGITAL SOLUTIONS
Pocket Filer $19
Pocket Planner $19
Pocket Writer 3
64 or 128 ..... $44 Ea.
Superpak 2 .....$59
DIGITEK
Hole in One Min. Golf $19
ELECTRONIC ARTS
Altered Beast $23
Bards Tale 2 .....$16
Beyond the Black Hole...$26
Blockout $21
Chessmaster 2100 .....$26
Crackdown $23
Dragon's Lair $19
Empire $26
F-16 Combat Pilot $23
Golden Ax $23
Hunt for Red October $21
Iron Lord $26
Jordon Vs. Bird $19
King's Bounty $26
Loopz ..... Call
Madden Football $26
Maniac Mansion $14
Mavis Beacon Typing $26
Might & Magic 1 .....$17
Might & Magic 2 .....$26
Napolean in Russia $23
Night Breed ..... Call
Night Shift ..... Call
Panzer Battles $23
Pipe Dream $14
Pro Tennis Tour $21
Project Firestart $21
Puffy's Saga $21
Sentinel Worlds $23
Skate Wars $21
Ski or Die $21
Starflight $26
Street Rod $26
Turbo Out Run $23
Untouchables ..... Call
Vegas Gambler $21
Zak McKracken $14
EPYX — *ON SALE!*
Devon Aire $13.88
Game Series 4 Pack! $23
Includes: Calif., Winter, World & Summer Games 2
Mind-Roll $13.88
Snow Strike $13.88
Sports-A-Roni $15.88
GAMETEK
Prime Time Hits Vol. 1 ...$19
Includes: Hollywood Sq., Super Password and Wheel of Fortune
Dr. Doom's Revenge $23
Magic Candle $25
Stunt Track Racer $19
Wierd Dreams $19
MELBOURNE HOUSE
Shark Attack ..... Call
World Trophy Soccer $19
MICROILLUSIONS
Blackjack Academy $25
Sky Travel $32
MICROLEAGUE
M. L. Baseball 2 .....$25
MICROPROSE
Airborne Ranger $25
F-15 Strike Eagle $14
F-19 Stealth Fighter $29
Gunship $25
Pirates $29
Red Storm Rising $29
Silent Service $14
MINDSCAPE
Action Fighter $21
Afterburner $23
Alien Syndrome $23
Days of Thunder ..... Call
Guantlet 2 .....$21
SIMON & SCHUSTER
Star Trek: Rebel $23
Typing Tutor 4 .....$25
SIR TECH
Heart of Maelstrom $25
Wizardry Trilogy $29
SSI
*Hintbooks Available .... Call
Battles of Napoleon $32
Buck Rogers: Countdown.$26
Champions of Krynn $26
Curse of Azure Bonds ...$26
D M Mast. Ast. 1 or 2...$21 Ea.
Dragons of Flame $14
Dragon Strike $26
Hillstar $26
Heroes of the Lance $21
Overrun $32
Pool of Radiance $26
Secret of Silver Blades ...$26
War of the Lance $26
SPINNAKER
Complete SAT $25
SUBLOGIC
Flight Simulator 2 .....$32
F.S. Scenery Disks ..... Call
Hawaii Scenery $19
TIMEWORKS
Data Manager 2 .....$14
Swiftcalc/Sideways $14
Word Writer 5 .....$25
UNISON WORLD
Print Master Plus $23
P.M. Art: Fantasy $16
WEEKLY READER
Stickybear Series:
ABC's $14
Math 1 or 2 ..... $14 Ea.
Numbers $14
Opposites $14
Reading $14
Read' Comprehension .$16
Shapes $14
Spellgrabber $16
Town Builder $16
Typing $16
ACCESSORIES
Animation Station $49
CompuServe Starter Kit .$19
Sony 5 1/4 DSDD .$6.99 Bx.
Disk Case (Holds 75) .. $6.88
Disk Drive Cleaner $4.88
Icontroller $14
Winner M3 Mouse $33
Wico Bat Handle Joystick .$17
Wico Boss Joystick $12
Wico Ergostick Joystick .$16
XETEC Super Graphix Jr. .$39

CALL OR WRITE FOR OUR FREE FALL 1990 COMMODORE CATALOG

HI-TECH EXPRESSIONS
Beetle Juice Print Kit $14
Elec. Co. Learning Lib. 1...$16
Jetsons/Flinstones Print Kit $14
Win, Lose or Draw Deluxe $16
INFOCOM
Battletech $25
INKWELL SYSTEMS
#170C Deluxe L.P. $69
#184C Light Pen $44
Flexidraw 5.5 .....$23
Graphics Integrator 2 ....$19
KONAMI/ULTRA
Blades of Steel $19
Castlevania $19
Teen Mutant Ninja Turtles.$19
MASTERTRONIC/VIRGIN
Clue $19
Double Dragon 2 .....$23
Mega 10 Game Pack $23
Monopoly $19
Risk $19
Scrabble $19
Spot ..... Call
Super Off-Road $19
MEDALIST/MICROPLAY
3-D Pool $19
Shinobi $21
Thunder Blade $23
MISC UTILITIES
Final Cartridge 3 .....$47
Maverick Utilities V.5 .....$25
Superbase 64 .....$25
Superbase 128 .....$33
Super Snapshot (V.5) $58
ORIGIN
Autoduel $25
Knights of Legend $33
Omega $33
Quest for Clues Book 2 ..$19
Space Rogue $33
Tangled Tales $19
Times of Lore $25
Ultima 4 or 5 ..... $39 Ea.
Ultima 6
coming Nov. they say...$44
Ultima Trilogy $39
Windwalker $25
PROFESSIONAL
Fleet System 2 Plus $39
Fleet System 4 128 .....$49
PSYGNOSIS - *ON SALE!*
Ballistix $16.88
Captain Fizz $18.88

$10 BARGAIN BASEMENT

*Alf $9.88
Arkanoid 2: Revenge... $9.88
*Beyond Dark Castle .. $9.88
Bubble Bobble $9.88
*Candyland $9.88
*Caveman Ugh-Lympics.$9.88
*Chutes & Ladders $9.88
*Double Dare $9.88
Double Dragon 1 ..... $9.88
EZ Working: Filer $6.88
EZ Working Writer $6.88
*Ferrari Formula 1 ..... $9.88
4th & Inches Football .. $9.88
*Grave Yardage $9.88
Hitchhiker's Guide $9.88
Hollywood Squares $9.88
*Kings Beach Volleyball..$9.88
Last Ninja $9.88
Learn the Alphabet $4.88
Learn to Add $4.88
Learn to Spell $4.88
*Leather Goddesses ... $9.88
Looney Tunes Print Kit . $9.88
Magic Johnson's B-Ball . $9.88
Marble Madness $9.88
Muppet Print Kit $9.88
*Murder on the Atlantic...$9.88
Music Const. Set $9.88
*Neuromancer $9.88
Newsroom $9.88
Newsroom Art
#1, 2 or 3 ..... $9.88 Ea.
Operation Wolf $9.88
Press Your Luck $9.88
Print Power $9.88
Qix $9.88
Rambo 3 ..... $9.88
*Rampage $9.88
Remote Control $8.88
Renegade $9.88
Revenge of Defender .. $9.88
Sesame Street Series:
Astro Grover $6.88
Big Bird's Special Del. $6.88
Ernie's Big Splash $6.88
Ernie's Magic Shapes. $6.88
Muppet Print Kit $9.88
Sesame St. Print Kit . $9.88
Shoot'em Up Construction Set $9.88
Sky Shark $9.88
Super Password $9.88
Tetris $9.88
Wasteland $9.88
Win Lose Draw 2 or Jr. . $8.88
*Now at New Low SDA Price

POLICIES & PROCEDURES

- SHIPPING: Continental U.S.A. — orders under $100 add $4; Free shipping on orders over $100: Call for details on overnight & 2 day shipping. AK, HI, FPO, APO - shipping is $5 on all orders. Canada and Puerto Rico — shipping is $7.50 on all orders. PA residents add 6% sales tax on the total amount of orders including shipping charges.
- UPS 2 day and overnight shipping available — Call.
- Orders with cashiers checks or money orders shipped immediately on in stock items. Personal and company checks, allow 14 business days clearance. No C.O.D.'s!
- Defective merchandise replaced within 60 days of purchase. Other returns subject to 20% restocking charge. You must call customer service for return authorization — 412-361-5291, 9-5:30 EST.
- Prices and availability are subject to change.

HOW TO ORDER

- Call us & use your Mastercard or Visa

USA/CANADA **1-800-225-7638**

Order Line Hours: Mon-Thurs 9:00 A.M.-9:00 P.M., Fri-9:00 A.M.-7:00 P.M., Sat-10:00 A.M.-4:00 P.M. EST.

- Send Money Orders or Checks to:

Software Discounters Int'l.
5607 Baum Blvd. Dept. RN
Pittsburgh, PA 15206

- Fax MC/VISA orders with our fax #1-412-361-4545
- Order Via Modem on CompuServe, GEnie & QLink.
- School purchase orders accepted.

courage by shooting or grabbing him. You can use a proton beam, bombs and shields against these eerie enemies, as you search the shaft's walls for bottles of power-restoring elixir.

Successfully collecting the slime brings you to the program's second part, which takes place on Broadway. Here the Statue of Liberty protects the ghostbusters by firing her torch at all sorts of attacking horrors. She weakens when a spirit hits her, and the game's heroes must help by scooping up invigorating ooze from the remains of blasted spooks.

The software's final segment is set at the Museum of Art. Your first task is to drop the ghostbusters safely down into a gallery via a rope. Once they're there, you constantly switch from one man to another as you move them to different positions, and you also have them continually exchange weapons.

The ghostbusters' goal is the defeat of Janosz, the museum's noxious curator, and the rescue of the kidnapped Baby Oscar. The game's grand finale comes with the destruction of Vigo, the bloodthirsty fiend who's behind all of New York's paranormal problems.

The program's graphics are excellent—they include digitized pictures from the film. The animation and sound are also outstanding.

Even more impressive than the sensory effects is the game's intriguing complexity. Its superb arcade sequences are skillfully blended with some fascinating tactical challenges, making the software extremely appealing.

Be warned, however, that this is not an easy game. Also, the program will give your disk drive quite a workout.

Nevertheless, despite its potential shortcomings, players who want to kick a little ectoplasm will love Ghostbusters II. It's one program that truly delivers some "spirited" fun. *(Activision; distributed by Mediagenic, 3885 Bohannon Drive, Menlo Park, CA 94025. C-64/$29.95.)*

—WALT LATOCHA
OAK PARK, IL

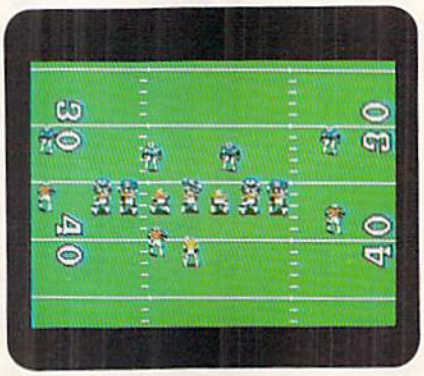
TV SPORTS FOOTBALL ..... B–

Finally Here for Your 64—Just in Time For the NFL TV Season

TV Sports Football (TVSF) is as close as an armchair quarterback can come to partcipating in a televised football game. The software contains much of the same hype and hoopla: the opening broadcast theme, the sports anchorman, sponsors and even halftime reports.

The Cinemaware Football League (CWFL) consists of 28 teams organized to resemble NFL teams. CWFL competition revolves around a 16-game season, complete with playoffs and the CWFL Championship (read: Super Bowl).

Once you've made a league data disk, you can roll up your sleeves and delve into the task of editing teams to suit your taste. Then, when you've had a chance to practice with your new team, it's off to the field.



The players line up for the snap of the ball in TV Sports Football.

After the opening coin toss, you're presented with the play-calling screen for both offense and defense. This screen also contains the scoreboard, timeouts, quarter, down and yards-to-go information. Play selection is accomplished via joystick. Onscreen diagrams of the different formations and "canned" plays make it easy for beginners to quickly choose and execute plays. If the program doesn't detect joystick movement after a few seconds, the computer automatically takes control of the game for that play.

The scene then switches to an overhead view of about 30 yards of the field. Here you can either execute the play as designed or take control of any one of several key players prior to the ball snap.

I was surprised by how faithful the graphics and sound of TVSF are to the original Amiga version—if not in quality, then at least in content. The colorful screens are very well drawn, and the players are large and detailed enough so that they don't get lost in the crowd during play execution. While controlling the players on the field is easy enough in theory, it can be a bit tricky in practice. The joystick seems overly sensitive, so it will take time before you'll become as proficient at tackling, passing and running the ball as the computer.

My only real complaint about this game revolves around the fact that Cinemaware couldn't fit team and individual statistics into the C-64 version as they had for the Amiga. Without the stats, which, in my mind, are almost as important as playing the game itself, TVSF may be seen as just another pretty face with little substance. But, then again, what a face! *(Cinemaware; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$29.95.)*

—JOHN RYAN
BILOXI, MS

HEATWAVE ..... B–

Landlubbers, Stay Ashore When the Power Boats Rev Up!

Heatwave is a superboat racing simulation that puts you at the helm of any of four powerful superboats: the Cougar Cat, the Warlock Cat, the Top Gun Cigarette, and for you Miami Vice fans, the Don Johnson Special. You choose one of six race courses—four are off the Miami coast, one is on the Mississippi River, and the other course is in San Francisco Bay.

You get only one pit stop per race—before you start. At the pits, you can add or remove gas, or pick up a spare propeller or shaft. Naturally, each item you add makes your boat heavier and, therefore, slower.

Piloting your superboat may prove tricky at first, but there is a practice mode to help you get your sea legs. Try to get your boat moving as quickly as possible without overheating the engine or causing damage to the shaft. Visual and audible warnings let you know when you should ease back on the throttle. Also, as you gain speed, and the boat's hull begins to lift out of the water, you must carefully adjust the trim to keep your boat from bobbing wildly over the waves—not an easy task when you're going 100 miles per hour!

Before you race, you must qualify by completing a solo run within a limited amount of time. You may also attend a drivers' meeting where you can bone up on some of the finer points of superboat racing.

Heatwave is a slick simulation but, frankly, not one of Accolade's best. The game features fairly decent graphics and makes good use of sound, but the ►

action, while fast and furious compared to an afternoon in a sailboat, doesn't offer the same level of excitement as, say, Grand Prix Circuit. This is because,

Check out this boat to race against Don Johnson in Heatwave.

although there are four other superboats on the same course, they seem more like computer-generated props than competing racers. *(Accolade, 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128. C-64/$29.95.)*

—BOB GUERRA
CHARLESTOWN, MA

AT A GLANCE

X-MEN: MADNESS IN MURDERWORLD ..... A

Professor Charles Xavier, founder of the X-Men (a band of mutant people born with extraordinary powers) has been snatched by his old foemen Magneto, Blob and the Juggernaut, and spirited off to Murderworld, the killing ground and private world of the sociopathic Arcade. To the professor's rescue come six of his students: Cyclops, Storm, Wolverine, Nightcrawler, Colossus and Dazzler.

What is unique about this program is that the gamer, rather than having to play all the way through as one of the X-Men, can switch between each of them during gameplay. This way, each character's various talents and attributes contribute to the final outcome.

Advanced gamers can attempt prowling through the 27 different levels on their own. Others might want to purchase the clue book, which contains a map of the entire maze.

Check out the users' manual if you're unfamiliar with the characters. It features several pages from Marvel's heroes and villains handbook. A 16-page Marvel comic is also included. By reading each, players will gain insight into how the X-Men work, both as individuals and as a solid fighting unit.

Perks of the program include Pause and Save features, essential in a game of this nature. X-Men is thoroughly enjoyable and totally engrossing. *(Paragon Software; distributed by Medalist International, 180 Lakefront Drive, Hunt Valley, MD 21030. C-64/$34.95.)*

—BOB SODARO ■

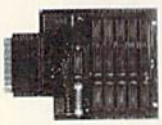
GEORAM Compatible

Make your Commodore a *Speed Demon*

TURBO MASTER CPU™
4.09 MHz Accelerator Cartridge for C64

- Four times faster processing speed combined with five times faster disk Load and Save.
- Software actually *runs* four times as fast. Basic, word-processor scrolling and search, spreadsheets, assemblers, graphics, GEOS etc. Compatible with most software.
- Jiffy DOS compatibility option available (by Creative Micro Designs). HD Compatible.
- Why upgrade when you can enjoy dazzling performance from your C64 now?
- Only $199. Shipping Included, 10-day satisfaction guarantee.

Data acquisition and control interfaces C64 & C128



80-line Simplified Digital I/O Board
with ROM cartridge socket
Model SS100 Plus $139. Additional $129.

Original Ultimate Interface
Universally applicable dual 6522 versatile interface adapter board.
Model 64IF22 $169. Additional $149.

16-Channel, 8-bit analog-to-digital conversion module.
Requires model 64IF22. Model 64IF/ADC0816 $69.

Interface boards include extensive documentation and program disk. Manuals available separately for examination. Call or write for detailed brochure.

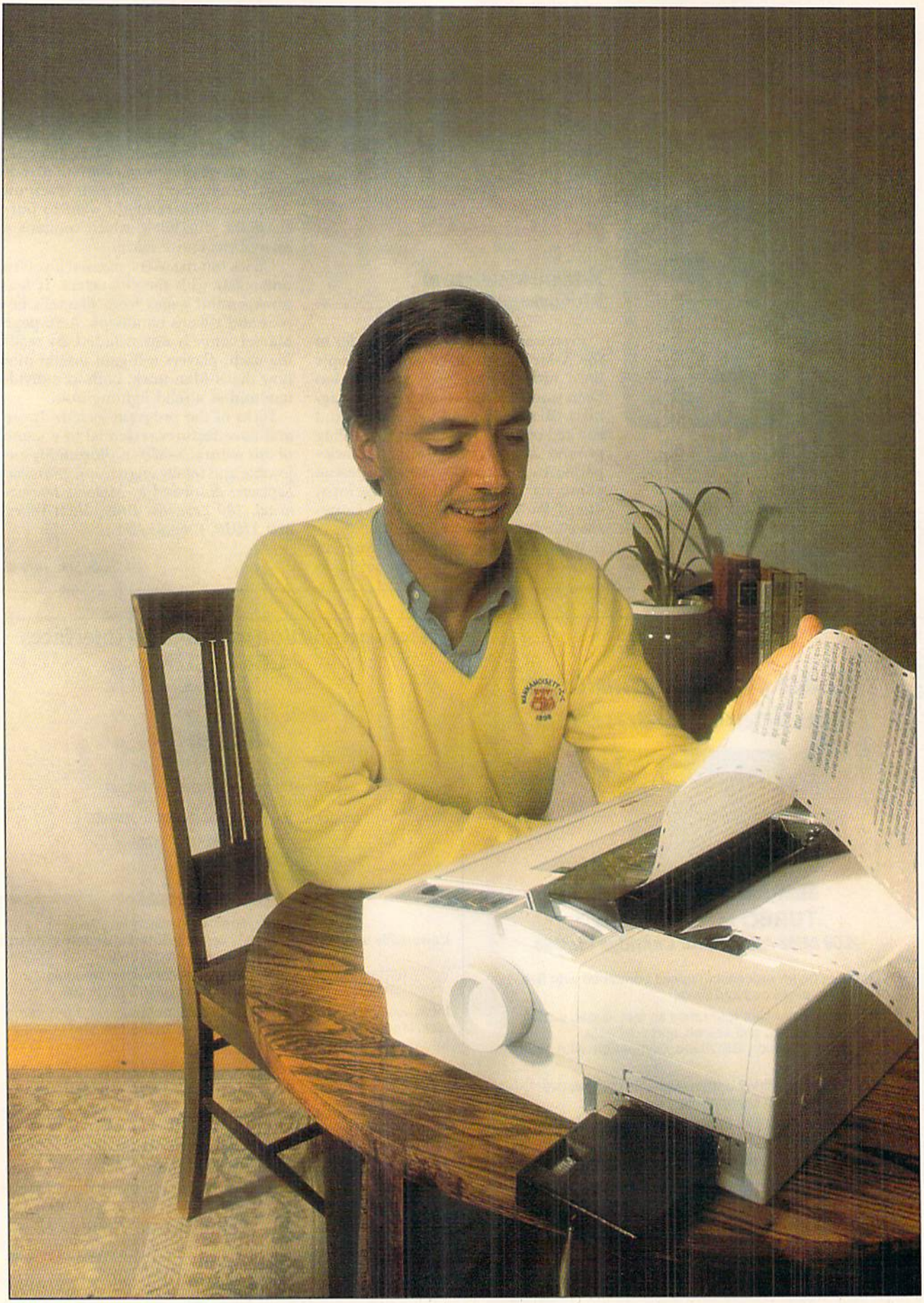
Resources for Serious Programmers.

- Symbol Master Multi-Pass Symbolic Disassembler. C64 & C128. $49.95
- PTD6510 super-powerful Symbolic Debugger. C64. $49.95
- MAE64 6502/65C02 Macro Editor/Assembler. $29.95
- C64 Source Code Book. Kernal and Basic ROMs. $29.95

"We engineer miracles."

SCHNEDLER SYSTEMS
Dept. R 6/7, 25 Eastwood Road, P.O. Box 5964
Asheville, North Carolina 28813 Telephone: (704) 274-4646

VISA and MasterCard accepted.
All prices include shipping
prepaid to US addresses.



PHOTOGRAPHED BY LARRY DUNN

Q&A PRINTER PRESCRIPTION

Here are the remedies to ten of your most common concerns about printers.

IN YEARS PAST, I've written printer articles covering what was new and which printers were the best investment for your hard-earned dollar. This year, I'll answer ten printer questions commonly asked by *RUN* readers. My aim is to help you find the printer that's right for your needs, and then get it to work properly with your C-64 or C-128. I'll wrap up with a look at two new low-end Commodore-compatible printers (see "Two Worth Noting" sidebar accompanying this article); but first, some general remarks.

The 9-pin printer of the 90s rivals many computer systems in technological sophistication. Four or five years ago, printer manufacturers began improving the quality of their products and increasing the number of features offered. The new printers can print faster, more quietly and in multiple fonts. They can also handle business envelopes, mailing labels and single sheets of business stationery with the greatest of ease. Older printers nearly choked on anything that deviated from continuous sheets, and many were reluctant to print on even that!

Nearly every printer available today requires a Commodore-compatible interface cable in order to be used with your computer. Commodore-dedicated printers, with their 9-pin serial cables, are rare nowadays, and any remaining should be disregarded. While they don't require a printer interface, they offer fewer features than other printers, and with only rare exceptions, are not upwardly compatible should you move on to a more advanced computer.

The Buying Process

To select the printer that best meets your needs, you should start by asking yourself some questions. Do you write a lot of letters? Would you like to create your own personalized stationery using graphic clip art? Do you plan to use a printer for a home business? For each of these needs, a good quality, low-priced, 9-pin dot matrix printer should be sufficient. If important documents constitute a majority of your printing, you should consider a higher quality 9-pin, or maybe even a 24-pin, printer. For good quality graphics and the rigors of daily continuous printing, as in a small office, you should price 24-pin printers.

Because they aren't Commodore-specific, printers can be bought at any computer store and needn't be purchased via mail order. An advantage to buying at a computer store is the opportunity to see sample printouts. Surprisingly, the quality can vary greatly among similarly priced printers from different manufacturers. Paper-handling capabilities can vary as well.

Once you've decided on the printer that best suits your needs, it's time to turn to the mail order firms to find an interface that will enable your Commodore to talk to your printer. Be sure to check several sources to get the best price.

Now on to. . .

Questions & Answers

Q. What features are most important when looking for a printer: speed, print options, compatibility or print quality?

A. Personally, I've found that no feature is as important as the quality of output. I'm willing to forego quite a few options in order to get good quality printed text and graphics.

Options are my second priority. A printer that you buy should, at the very least, print in pica (10 characters per inch), elite (12 cpi) and condensed (17 or 18 cpi). Additional features, like multiple software-selectable fonts and various printing densities make the printer more useful, but aren't crucial to most home computerists. Esoteric options, such as a quiet mode, are usually more gimmicky than practical. ►

By TIM WALSH

Don't overlook compatibility, especially when using software packages such as GEOS (which relies on printer drivers). An effort has been made in recent years to build Epson-code compatibility into new printers, because most software programs offer Epson support. However, it's still possible to buy a printer, especially a color model, that won't print properly with your Commodore, at least not without a lot of software and DIP-switch tweaking.

Speed is most important if you work under tight deadlines or do a lot of printing. Unfortunately, high speed and great looking print are mutually exclusive, except in the rarefied atmosphere of laser printers, which are often beyond the financial means of Commodore computerists.

Q. My friend's PC-compatible computer uses a generic Centronics parallel cable to connect to the printer. Why does my C-64 require a hard-to-find printer interface?

A. Commodore 8-bit computers lack the Centronics parallel printer port enjoyed by PC-compatibles and many other computers. Over the years, the best solution to this dilemma has been the Commodore-compatible printer interface, which connects to the 9-pin serial port of your disk drive or computer. Most printer interfaces are not equipped with a power supply, so they usually rely on the cassette port as a power source.

Q. How does a 24-pin dot matrix printer differ from a 9-pin dot matrix printer?

2 WORTH

THE STAR MICRONICS NX-2410 MULTI-FONT

Star's NX-2410 and sample printout.

The Star NX-2410 Multi-Font is a good 24-pin printer that will fit even the smallest of budgets. A near-clone of the Star NX-2400 24-pin printer that *RUN* reviewed one year ago ("Making an Impression with Printers," November 1989), the NX-2410 offers plenty of printing options for the money.

The NX-2410 has an elaborate control panel with four control buttons that activate many different print options. For example, you can select from four letter quality fonts (including a nicely detailed Script font), Italics, three print pitches and Quiet mode, to name but a few.

Paper handling options are also plentiful: Remove the paper guide to place single sheets into the printer and pull the bail lever to let the printer automatically load the paper. Best of all, a paper-parking feature is included. Select the Park option (hold down the Quiet button and press the Paper Feed button) from the control panel, and the continuous forms are retracted and parked in place, allowing single sheets to be loaded.

Power up the NX-2410 and, unlike most other printers that start off in Draft mode, you'll find the printer defaults to Letter Quality mode. While this is convenient if you rarely print anything except final copies, most users prefer to make multiple draft copies of their work for close scrutiny. It's a little cumbersome to select Draft mode manually (a minimum of four button presses on the control panel), but it will conserve the life of both the printhead and the ribbon.

The NX-2410 boasts one significant improvement: darker print quality than its predecessor. Combine that feature with the many fonts it offers, good paper handling and a budget price, and you've got a great 24-pin printer to match up with your Commodore.

COMMENTS AND OBSERVATIONS

The NX-2410 prints graphics and text fairly well, although slowly in comparison to other 9- and 24-pin printers. The leisurely printing pace is tolerable; more annoying is the fact that the printer powers up in Letter Quality mode. If you rarely print in this mode, you'll get plenty of practice switching modes on the control panel before printing.

Printing on stationery and labels is easy with the NX-2410, while its paper handling is not as sophisticated as the Citizen 200GX (reviewed opposite). In comparison with other 24-pin printers, the NX-2410 definitely qualifies under middle-of-the-pack. But, its low price makes it a reasonable and attractive purchase for a newcomer to the world of 24-pin printers.

Regardless of its few shortcomings, the NX-2410 remains a good printer, with many print options. In fact, it possesses more print options than even the most talented Commodore users will put to use. Add that to 24-pin printing and a low price, and the NX-2410 is a good bet for Commodore users.

NX-2410 SPECS

Maximum printing speed: 150 cps, in Draft Pica mode
Emulation modes: Epson LQ-800 and IBM Proprinter X24
Fonts: Courier, Prestige, Orator, Script
LQ matrix: 24 × 35 (pica)
Horizontal Bit Image modes: 60, 80, 90, 120, 180, 240 and 360 dots per inch
Programmable line spacing: $^1/_6$, $^1/_8$ or programmable in $^1/_{60}$", $^1/_{72}$", $^1/_{180}$", $^1/_{216}$" or $^1/_{360}$"-inch increments
Size: 4.7 H × 16.1 W × 12.9 D
Weight: 14.1 lbs.
Price: $399

A. The printhead in a 24-pin model creates images with 24 pins, arranged in a matrix of rows and columns; the printhead in a 9-pin model uses 9 pins. While the output of 9-pin printers once lacked quality as compared to 24-pin printers, that's no longer the case. Thanks to advances in technology, there's now very little discernible difference between the types. Many 9-pins presently also incorporate the automatic paper handling that was once the exclusive domain of 24-pin printers.

In spite of these advancements, 24-pin printers still hold an advantage when it comes to durability. Because they're designed with sturdier components, they're ideal for busy offices where they get continuous use.

Q. Is it practical for a C-64 or C-128 user to invest in a laser printer that costs several times more than the rest of his or her computer system?

A. The answer to that question depends on your needs. Laser printers create wonderfully detailed graphics, print several times faster than the fastest dot matrix printers, and can be expanded by adding font and buffer memory cartridges. If you need these features without requiring a 16-bit computer, a laser printer to go with your Commodore will be worthwhile. And Hewlett-Packard-compatible laser printers work fine with the C-64 and C-128. However, most Commodore computerists who need these features have also outgrown their 8-bit machine. ►

NOTING

THE CITIZEN 200GX

Citizen's 200GX and sample printout.

The Citizen 200GX represents a new generation of 9-pin printers. Fast (240 cps) and packed with options, the 200GX is one of the more interesting printers on the market.

For starters, it offers Epson FX-850 and IBM Proprinter III emulation. While this might not appeal to every Commodore owner, you'll appreciate the emulation options if you ever upgrade to another computer. In addition to multiple printer emulation, fast printing and great paper handling options, what really sets the 200GX apart from the rest of the pack is its Command-Vue II control panel.

Unlike conventional printer control panels, the Command-Vue II consists of LED-type lights and a sliding switch that lets you choose menu options easily and quickly. You can select one of four main menu features (Online, Pitch, Font and Install) from this unique control panel. Each of these main options consists of four sub-options, making a combination of 16 print options available. A quiet mode, normally found on pricey 24-pin printers, is also provided.

Three fonts (Roman, Sans Serif and Courier) are available from either the previously mentioned control panel or through software commands. A total of seven print pitches are offered: 10, 12 and 15 cpi or proportional from the control panel and three pitches (13.3, 17 and 20 cpi) via software commands.

Of all the options, my favorite is being able to quickly convert from a monochrome (black and white) printer into a color printer. Citizen offers a GSX 140/Swift 24 Color Kit for the 200GX, consisting of a color ribbon and a small electric motor. With the ribbon and motor (which can be installed in about one minute) and the flip of a DIP switch, the 200GX becomes a color printer. Even with the kit in place and activated, the 200GX retains all the options it had before the color was installed.

COMMENTS AND OBSERVATIONS

When used on a daily basis, the 200GX will quickly spoil even the casual C-64/128 user. It's enjoyable to work with and less clumsy than the NX-2410 in most respects, especially paper handling. When you turn the printer on, it automatically busies itself positioning and aligning the paper, something unheard of in low-end printers up until about two years ago.

Printing on stationery is remarkably easy. Just pop the paper guide on top, select the Paper Parking option from the Command-Vue II menu, and you're on your way. The many printing features you can select with the Command-Vue II Menu option places the 200GX in a class by itself.

You wouldn't expect so many options and such ease of use to be packed into a 9-pin printer. The 200GX is a wonderful printer and ranks as one of the best I've used. Fast, quiet and loaded with features, the 200GX is a true marvel!

CITIZEN 200GX SPECS

Maximum printing speed: 240 cps, in Super High-Speed mode at 15 cpi
Emulation modes: Epson FX-850 and IBM Proprinter III
Fonts: Roman, Sans Serif, Courier
NLQ matrix: 18 × 18 dots
Horizontal Bit Image modes: 60, 72, 80, 90, 120, 144 and 240 dots per inch
Programmable line spacing: $^1/_6$, $^1/_8$, $^7/_{72}$ or programmable in $^1/_{72}$-, $^1/_{144}$- or $^1/_{216}$-inch increments
Size: 5.1 H × 15.8 W × 12.6 D
Weight: 11 lbs.
Price: $299 R

I see only two disadvantages to owning a laser printer: the cash outlay for the printer, and the fact that they're large and occupy a lot of desk space.

Q. What type of printer is best for GEOS? Also, what is a GEOS printer driver, and how is it used?

A. GEOS employs techniques and terminology different from most other software programs. When you print a document with most C-64/128 word processors and other application programs, you're using the Text or Character mode of the printer. With GEOS, you're printing a bit-mapped screen using the Graphics mode of the printer, and Graphics mode requires special codes from the computer. First, the computer must set the printer to Graphics mode in order to print the bit map. Then it has to send a small series of commands so the printer receives the data and creates the image properly. Because these commands differ from printer to printer, a special driver is needed for each printer.

As I mentioned earlier, most newer printers use Epson codes, so you can create satisfactory printouts using virtually any of GEOS's Epson printer drivers. If you have an older, Commodore-compatible printer, you can print with any of GEOS's Commodore-compatible printer drivers.

Q. What's the difference between the fonts provided by my software and the fonts provided by the newer printers and font cartridges?

A. In nearly all cases, software creates fonts by duplicating, pixel by pixel, the bit-mapped screen on the printer. Not only is this the method employed by GEOS, it is also a common practice with graphics programs, banner makers and many other software packages. With a late-model, high quality 9- or 24-pin printer, the output is usually acceptable for all but the most important of documents. When using older, less versatile dot matrix printers, however, software fonts often make some parts of the document look darker than others. Consequently, software-generated fonts are more amateurish in appearance than those created internally by the printer.

A newer printer's built-in fonts are not only of uniform quality but also proportionally spaced—that is, the space occupied by two letter i's is less than the space occupied by two letter m's. Such printing gives documents a better appearance than printing with older model printers that lack proportional printing capability.

Q. Are color printers a good investment, and do they work well with the C-64 and C-128?

A. A color printer is a good investment, if you need one for your work or for creating calendars, greeting cards or other works of art. Most of the color printers that are Epson code-compatible will print in color with software packages like GEOS. The secret is to use the Epson JX-80 printer driver; the JX-80 printer codes are still employed by Epson-compatible color printers.

Q. How do I program my printer to print the way I want? Codes in the manual, such as ESC "4", make no sense to me.

A. This is one of the questions I hear most frequently. There's one surefire solution to this problem: Learn how to convert the ASCII codes presented in the manual to their decimal equivalents, and then learn the proper syntax for sending them to your printer.

Before you ask the computer to send a command to the printer, the computer has to understand the command. Nearly all the printer manuals written today assume that you're using an IBM or IBM-compatible computer that requires no translation of these commands into another syntax that the computer will understand. The ESC "4" command in the sample above makes perfect sense to a PC-compatible, but no sense to your Commodore. Another consideration is that your printer interface must be in Transparent or ASCII mode in order for the commands to travel from the computer to the printer without any conversions occurring. Finally, if you're sending commands from outside a software package, you must open a channel to the printer.

For demonstration purposes, a Star NX-1000 II printer requires the following command sequence to print in Near Letter Quality (NLQ) mode using Sans Serif characters:

```
ESC "k" 1
```

First you must be certain that the printer interface is in Transparent mode. Check your interface manual to see how this is done. It usually involves just flipping a DIP switch or two on the interface.

Next you must convert all the ASCII values in the command to decimal values. Check the printer manual, which provides reference numbers and decimal equivalents, to find the decimal numbers needed.

Finally, open a channel to the printer, precede the decimal numbers with the CHR$ (character string) command, enclose the values within parentheses, and then close the channel to the printer. The line appears as follows in Direct mode:

```
OPEN 4,4: PRINT#4, CHR$(27);CHR$(107);CHR$(1):CLOSE 4
```

To use the same command within a word processor, you'd have to make some slight adjustments. As an example, let's use *RUN*'s word processor, RUN Script.

First you'd use the .pr dot command to send printer commands from within RUN Script to the printer. Again, ensure that your printer interface is in Transparent or ASCII mode, and then enter the following dot command sequence:

```
.pr7,27,107,1
```

Note the inclusion of a 7 at the beginning of the command. This is the secondary address for the printer.

Q. I'm interested in doing desktop publishing on my Commodore. Which printer should I consider for this work?

A. Ultimately, a laser printer is the logical choice, but you can produce acceptable documents with a good dot matrix printer and a desktop publishing package like geoPublish. You can also use the dot matrix printer to produce proofs of your document, then take your disk to a users' group or friend with a Commodore and a laser printer to get a top quality final product.

Q. There's been a lot of talk about letter quality and near letter quality printing. What are these two types of output?

A. A few years ago, letter quality referred to the print generated by typewriters and daisy wheel printers. Now, daisy wheel printers, which are essentially daisy wheel typewriters lacking a keyboard, are obsolete, and letter quality printing refers to the excellent output from 24-pin dot matrix printers. Some of the better 9-pin printers from manufacturers such as Okidata, Panasonic and Epson are also capable of first-rate characters and graphics.

I hope my answers will help you select a printer and then use it to best advantage. It may take some time and effort to learn to use all your printer's capabilities, but turning out superb documents will make it all worthwhile. ■

Tim Walsh is RUN*'s technical manager and resident printer guru.*

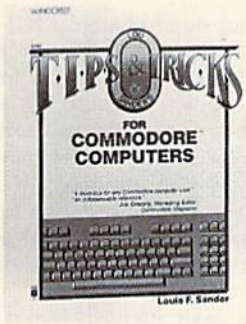
Get A Goldmine of Tips and Projects for Your Commodore

Build Up Your Game Strategies!

LOU SANDER'S GOLD MINE:
Game Tips for Commodore™ Users by Lou Sander

NEW

Sharpen your game-playing skills with over 1200 tips on 500+ popular software games in this one handy volume! Master such favorites as "Breakthru," "Defender of the Crown," "GUNSHIP," "The Last Ninja," "Legacy of the Ancients," and more with these proven pointers. This rich assortment of winning formulas offers the best of Lou Sander's popular "Gold Mine" column, plus hundreds of tips never before published! 352 pp./illustrated.
#3323H, $28.95 Hardcover



Stretch Your Commodore's Capabilities!

LOU SANDER'S TIPS AND TRICKS FOR COMMODORE COMPUTERS by Louis F. Sander

". . . good reading and an indispensable reference tool."
—James Gracely, Former Managing Editor, *Commodore Magazine*

Enjoy EVEN MORE tips from Lou Sander, columnist of Commodore Magazine's "Tips and Tricks." Includes 500+ user-tested tips and ready-to-use programs—many never before in print! Get valuable programs to create an easy word processor, memory saver, search mechanism, mode guard, and more. Plus, you get answers to your questions on: setting up and operating the computer; improving programming skills; and maximizing disks, printers, monitors, keyboards, peripherals, and more.
412 pp./illustrated. **#3192P, $21.95 Paperback**

NEW

Use Your C-128's Full Sound and Graphics Potential in 3 Modes!

ADVANCED COMMODORE 128™ GRAPHICS AND SOUND PROGRAMMING by Stan Krute

Create professional-quality sound and graphics—without using any add-on hardware. This time-saving reference takes you through each step with • sample exercises and ready-to-run programs • a Sound and Music Lab that uses a point-and-click interface • complete program listings with C-128 specifics • and routines for locating points on a high-resolution screen . . . drawing lines and simple polygons . . .pattern painting, and more. 414 pp. 72 illus.
#2630H, $21.95 Hardcover

More Bestselling Books

The Commodore Programmer's Challenge: 50 Challenging Problems to Test Your Programming Skills—with Solutions in BASIC™, Pascal®, and C® *by S. Chen. 237 pp. Illustrated.* #2817P, $14.95 Paperback

Commodore 128 BASIC: Programming Techniques *by M. Hardee. 190 pp., 120 illus.* #2732P, $12.95 Paperback

Serious Programming for the Commodore 64 *by H. Simpson. 208 pp., 124 illus.* #1821P, $12.95 Paperback

1001 Things to Do with Your Commodore 128 *by M.R. Sawusch/D. Prochnow. 206 pp., 74 illus.* #2756P, $12.95 Paperback

Commodore 128 Programming Secrets #15030P, $15.95

Your Commodore 128™ #15028P, $16.95

Your Commodore 64™ #15029P, $16.95

Flight Simulator and Flight Simulator II: 82 Challenging New Adventures *by D. Prochnow. 224 pp., 66 illus.* #2862P, $12.95 Paperback

GUNSHIP: 82 Challenging Adventures *by D. Prochnow. 208 pp., 83 illus.* #3032P, $12.95 Paperback

JET: 82 Challenging Adventures *by D. Prochnow. 208 pp., 108 illus.* #2872H, $19.95 Hardcover

TAB TAB BOOKS
Blue Ridge Summit, PA 17294-0840

TO ORDER CALL TOLL FREE
1-800-343-0728
Ask for the TAB BOOKS Operator

Or mail ad to: TAB BOOKS, Blue Ridge Summit, PA 17294-0840.

YES, please send me the following book(s). Please Print

Book # _____ Title _____ $ _____

Book # _____ Title _____ $ _____

Shipping and Handling ($5 outside the U.S.A.) $ 3.00

Please add applicable state and local sales tax. $ _____

TOTAL $ _____

☐ Check or money order enclosed made payable to TAB BOOKS

Charge my ☐ VISA ☐ MasterCard ☐ American Express

Acct. No. _____ Exp. _____

Signature _____

Name _____

Address _____

City _____

State/Zip _____

Prices subject to change. RM1190

Printer Controller 64/128

Here's an easy way to dress up your printouts with Italics, Bold and many other options.

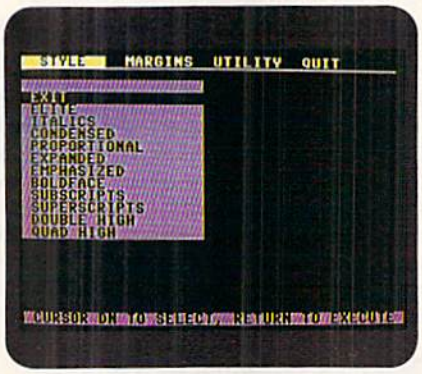
By WILLIAM McLEOD

Today's sophisticated dot matrix printers require a hundred or more commands to fully utilize their capabilities, and many printing options remain unused because of the time required to look up and invoke the commands. Consequently, we settle for pedestrian printouts instead of the more attractive styles that are available. I developed Control Printer 64/128 to make it easier to use printer options by making it simpler to input printer control codes.

Control Printer 64/128 runs on the C-64 or C-128 (40 or 80 columns), automatically configuring itself to either computer. The program was written for the Star Micronics NP-10 and compatible printers, but many of the commands work with most other parallel printers. Control Printer can be easily modified for use with other printers. As written, it *won't* work with Commodore-dedicated printers.

Control Printer is entirely menu-driven. After typing in Listing 1, using *RUN*'s Checksum program to look for typing errors, save it to disk, then run it. The top line of the first screen presents the main menu: Style, Margins, Utility and Quit. As indicated by a command line at the bottom of the screen, you make a selection by using the cursor-right key to highlight your choice and then pressing the return key. Selecting Style displays a pull-down secondary menu of 11 styles of printing. Make your choice, press return, and your printer will be configured to that feature. Of course, the printer must be connected and turned on for the selection to work.

You can enter several commands, such as Elite, Italics, Expanded and Boldface, and the printer will combine them all and retain them until it is shut off or reset.



Style's pull-down secondary menu.

After you've made your selection of styles, press return, and you'll go back to the main menu. Now select Utility and press return; then choose and execute View Printout. The printer will print a list of the styles selected and a short sentence illustrating the style combination, with the paper rolling up an inch, so you can see what was printed. The Sample Printout option prints the same thing without rolling the paper up. If you haven't selected a style, the printer will respond with Pica, as this is the default on most printers.

The Margins menu is for setting margins, of course. However, it also lets you set the printer to skip over perforations and provide paging.

At any time, you can save your work to disk by typing RUN 20 and pressing return. Line 20 establishes the name of the program, 30 scratches the old version, and 40 saves the new version. If you make changes in the program, you should change line 20 to ZZ$= "1PRINTER" or some other name in order to preserve the original.

Making Changes

You can change the titles in the main menu by changing the Data statements in line 120, but don't change END in line 130, as it serves as a terminator for the array. The menu is limited to four titles of 18 characters each for the C-128 in 80-Column mode and seven characters in 40-Column or 64 mode. Anything longer will automatically be truncated. If you want more than four items in the main menu, you're on your own, as this requires extensive alterations to Control Printer 64/128.

Data for the Style menu is found in lines 220–230, Margins in 320–330 and Utility in 420–430. Each of their secondary menus can handle up to 11 titles, so there's room for a total of 11 more commands—five in the Margins menu and six in the Utility menu.

To add a command to the Margins menu, add the command's title to line 330 and its subroutine starting on line 1790, erasing the REM and using the same format as in the other command routines. Each new routine must start at the next available REM in that menu, and it must not occupy a line already containing a REM.

New commands that require entering a column number should be placed in the Margins menu, as it is equipped for that type of input. Of course, you can delete any menu item and substitute your own in its place.

Printer Commands

If Control Printer 64/128 runs all right, but the printer isn't responding properly, the interface probably isn't in Transparent or Semi-Transparent mode. This is handled throughout the program with an OPEN 5,4,S command, where S is set to 5 in line 90. Most interfaces use 5 as a secondary address for Transparent mode, but that number does vary. Consult your interface manual and change line 90 or flip the necessary DIP switches on your ►

RUN it right: **C-64 or C-128; printer**

The Best Prices & Service

Memory Expansion!

GEORAM

$124.95

Believe it or not, GEORAM's disk transfer rate is actually 35 times faster than the 1541, 1571, or 1581 disk drive! This means that screens redraw in a flash, and that your Commodore doesn't waste time spinning disks looking for data. GEORAM makes the GEOS family of programs faster and more powerful than ever. NOTE: GEORAM is designed for use ONLY in the GEOS environment—it cannot be used with non-GEOS software.

GEORAM (requires GEOS) 88604 $124.95

1750 Clone

$199.95

The 1750 Clone offers 512K, and works with all software that is 1750 compatible (e.g., GEOS, Paperclip III, and Maverick). Furthermore, you can use it to create a RAM disk to store files or programs for lightning-fast access. (Unlike GEORAM, the 1750 Clone works with non-GEOS software. Some computers may require power supply.)

1750 Clone 89517 $199.95

Super Mouse Bargain!

$38.95

Includes GEOS 1.5 Plus Graphic & Utility Software!

M3 MOUSE. Proportional mode, joystick mode and paddle mode—three modes in one mouse. Features Hi-Res graphic design software with predefined graphics, sprite and icon designers, and mouse controller, plus, handy disk utilities such as windows, pull-down menus, file, and notepad. Also includes GEOS 1.5. From Contriver Technology, Inc. One-year warranty. Sug. Retail $49.95/$39.95

M3 Mouse 82704 $38.95
M4 Mouse for AMIGA 88171 $34.95

$129.95

Commodore 64C

The complete computer for home, school and small business. Supported by high-quality peripherals and over 10,000 software programs. Full typewriter-style keyboard, 64K RAM, eight sprites, three voices.

64C Computer 54574 $129.95

Commodore Hardware

1670 Modem, 1200 Baud	**36952**	**$69.95**
1351 Mouse C64/C128	**37885**	**$32.95**
1084S RGB Composite Monitor	**74095**	**$319.95**
1541 II Disk Drive	**54586**	**$CALL**
1764 RAM Expansion C64	**72513**	**$114.95**

Now For Amiga, Too!

2400 Baud C64/C128

$79.95

Both the Minimodem-C and C24 are completely Hayes compatible (not just partially compatible like the 1670 and some Avatex models) **and** 1670 compatible. This means they'll work with ALL communications software for the 64, 64C, and 128. Key features include seven status indicators, Busy Detect, DTR signal support, High Speed Detect Line, and Auto Answer/Auto Dial. Includes Multiterm 64 and 128 software so you can start communicating right away, plus a free trial hour on CompuServel Full-year warranty.

1200 Baud C64/C128

$59.95

The Amiga versions of the Minimodems are equipped with a female connector to plug directly into the Amiga 500 or 2000. They need no external wall plug for power, and they use the Amiga's audio output for maximum fidelity.

Minimodem-C24 (2400 Baud for C64/C128) 88148 $79.95
Minimodem-C (1200 Baud for C64/C128) 81576 $59.95
Minimodem-AM24 (2400 Baud for Amiga) 88150 $79.95

Back Up Protected Software

$32.95

Now For Amiga, Too!

New Features Include:

- **Fast autobooting with 1541, 1571, and 1581 drives**
- **Single drive 1571 Double-sided copier**
- **Directory recovery: Recover blown 1541,1571, and 1581 disks**

MAVERICK VERSION 5.0. The best weapon ever created to let you defend yourself in the copy protection wars. It comes with over 400 parameters and updates are available to registered owners three times a year. For archival backup only. Formerly called Renegade. Sug. Retail $39.95

C64/C128, Disk 78919 $32.95
AMIGA, Disk 89601 $32.95

Disk Drive Includes FREE Software!

$149.95

FSD-2 Excelerator+

- Completely Commodore Compatible
- Faster, quieter, and more reliable
- Separate power supply eliminates overheating
- Full one-year warranty
- FREE software

Sug. Retail $179.95

FSD-2 Excelerator+ 66166 $149.95

Panasonic Office Automation OA EPSON Star THE COMPUTER PRINTER

Call for Lowest Printer Prices!

FREE 60-Page Catalog

Thousands of products for your COMMODORE 64, 128 and AMIGA computers. CALL TODAY to receive your FREE copy!

Includes FREE Software

Only TENEX offers you this great choice of software included with our FSD-2 Excelerator+ disk drive. You have your choice of:

BETTERWORKING WORD PUBLISHER— a GEOS-compatible word processor/publishing package that includes a 100,000 word spell checker, geoPaint/geoFont compatibility, WYSIWYG preview mode, and much more. REQUIRES GEOS. From Spinnaker.

Orig. Retail Value $39.95

—OR—

ASSAULT ON EGRETH CASTLE and CRYSTAL OF DOOM— Two great interactive comic books from the Zorkquest series. From Infocom.

Orig. Retail Value $24.00

Quantities are limited, so order early! Just order Item No. 89198 (Word Publisher) or Item Nos. 80742 and 80758 (Two Zorkquest Comics) and we'll include the software at no extra charge.

TENEX™ Computer Express

We gladly accept mail orders!

TENEX Computer Express
P.O. Box 6578
South Bend, IN 46660
(219) 259-7051 — FAX (219) 255-1778

No Extra Fee For Charges!

VISA MasterCard DISCOVER

We Verify Charge Card Addresses

***Shipping, Handling, Insurance**

Order Amount	Charge
less than $19.99	$3.75
$20.00-$39.99	4.75
$40.00-$74.99	5.75
$75.00-$149.99	6.75
$150.00-$299.99	7.75
$300.00 & up	$CALL

ORDER TODAY CALL 1-800-PROMPT-1

COMMODORE 64 and COMMODORE 128 are registered trademarks of Commodore Electronics, Ltd. AMIGA is a registered trademark of Commodore Amiga Inc., NOTE: Due to publishing lead-times, product prices and specifications are subject to change without notice. * APO, FPO, AK, HI, CN, VI, GU, and foreign orders are subject to additional shipping charges. R3V

printer interface for either Transparent or Semi-Transparent mode.

Now we get down to the actual printer commands. First, run through all the menus to become familiar with the procedure. You'll find that it's very easy. Next, reset the printer and exit to the main menu. Now try each of the styles in turn, printing a sample and resetting the printer each time.

If any command fails to print correctly, look at lines 1000–1320, and note that each group of lines is labeled with its title and that the second line in each group is the command line. For emphasized print, the command is PRINT#5, C$"E", where C$ is previously defined as CHR$(27). Most of the codes use C$. The code C$"E" can also be written CHR$(27);CHR$(69), where CHR$(69) is the code for the letter E. Look up the code for emphasized print in your printer manual, and enter it in place of C$"E". Any other printer commands that fail to work can be handled in a similar manner, assuming that your printer supports that style. All commands for the Margins menu start at line 1520, and those for the Utility menu start at 1820.

All of this is reasonably straightforward, except for the addition of line 1670 to disable the interface control for the right-hand margin. If your interface doesn't have a disable command, you may be able to set it at a high number such as 150 or 200.

Using the Program

For use with a word processor, set up the printer as desired before loading the word processor. The printer will retain the combination you set, but it's always possible that the word processor will have ideas of its own. In that case, look in the word processor's manual for a way to prevent that software from doing its own printer initialization.

By using Elite, Condensed and Subscripts commands and reducing linespacing to one-twelfth inch, you can produce a disk directory that can be pasted on the front of the disk sleeve. The type is quite readable, because it's a dense black. Just type LOAD"$",8 and return, then OPEN 4,4:CMD4:LIST.

Double-height letters are ideal for name tags, and quad height works fine for posters. Form feed is great for printing out listings of long programs without printing over the perforations. You'll find many other uses for Control Printer 64/128, as you gain experience with it. Besides that, it's fun just printing out all the combinations of styles. R

William McLeod, a young 80-year-old, lists electronics and computer programming among his hobbies.

Listing 1. Control Printer 64/128 program. (Available on ReRUN disk. See order card facing page 48.)

```
5 REM CONTROL YOUR PRINTER - WI
  LLIAM MCLEOD              :REM*73
1Ø GOTO5Ø                   :REM*14Ø
2Ø ZZ$="PRINTER"            :REM*236
3Ø OPEN15,8,15,"SØ:"+ZZ$ :REM*9
4Ø CLOSE15:SAVE ZZ$,8:END
                            :REM*15Ø
5Ø DIM P$(13),HP$(13),A$(13),M$
   (11),HM$(11)             :REM*76
6Ø L=9:T=9:LL=39:A=PEEK(215):IF
    A=128 THEN L=19:T=19:LL=79:
   FAST                     :REM*25
7Ø I=1:H$="{CTRL 9}":N$="{CTRL
   Ø}":RM=8Ø                :REM*196
8Ø Z$=CHR$(29):R$=CHR$(13):C$=C
   HR$(27):CU$=CHR$(145):CD$=CH
   R$(17)                   :REM*123
9Ø S=5: REM TRANSPARENT MODE
                            :REM*2Ø1
1ØØ POKE5328Ø,Ø:POKE53281,Ø
                            :REM*148
11Ø READ N$(I):REM MAIN MENU
                            :REM*129
12Ø DATA STYLE,MARGINS,UTILITY,
    QUIT                    :REM*167
13Ø DATA END                :REM*138
14Ø IF N$(I)="END" THEN K=I-1:G
    OTO17Ø                  :REM*37
15Ø N$(I)="{2 SPACEs}"+N$(I)+"{
    18 SPACEs}":N$(I)=LEFT$(N$(
    I),L)                   :REM*123
16Ø I=I+1:GOTO11Ø           :REM*16
17Ø FORI=1TOK+1             :REM*18Ø
18Ø H$(I)=H$+N$(I)+N$       :REM*19Ø
19Ø NEXT                    :REM*65
2ØØ K=1:REM STYLE           :REM*5Ø
21Ø READ P$(K)              :REM*119
22Ø DATA EXIT,ELITE,ITALICS,CON
    DENSED,PROPORTIONAL,EXPANDE
    D,EMPHASIZED            :REM*232
23Ø DATA BOLDFACE,SUBSCRIPTS,SU
    PERSCRIPTS,DOUBLE HIGH,QUAD
     HIGH                   :REM*1Ø4
24Ø DATA END                :REM*244
25Ø IF P$(K)="END" THEN J1=K-1:
    GOTO28Ø                 :REM*46
26Ø P$(K)=" "+P$(K)+"{14 SPACEs
    }":P$(K)=LEFT$(P$(K),19)
                            :REM*213
27Ø K=K+1:GOTO21Ø           :REM*11Ø
28Ø FOR K=1 TO J1           :REM*91
29Ø HP$(K)=H$+P$(K)+N$:NEXT
                            :REM*188
3ØØ K=1:REM MARGINS         :REM*196
31Ø READ M$(K)              :REM*213
32Ø DATA EXIT,TOP MARGIN,BOTTOM
     MARGIN,LEFT MARGIN,RIGHT M
    ARGIN                   :REM*224
33Ø DATA LINE SPACING N/216,FOR
    M FEED                  :REM*113
34Ø DATA END                :REM*95
35Ø IFM$(K)="END"THEN J2=K-1:GO
    TO38Ø                   :REM*173
36Ø M$(K)=" "+M$(K)+"{14 SPACEs
    }":M$(K)=LEFT$(M$(K),19)
                            :REM*57
37Ø K=K+1:GOTO31Ø           :REM*25Ø
38Ø FOR K=1 TO J2           :REM*176
39Ø HM$(K)=H$+M$(K)+N$:NEXT
                            :REM*12Ø
4ØØ K=1:REM UTILITY         :REM*126
41Ø READ G$(K)              :REM*46
42Ø DATA EXIT,RESET PRINTER,SLA
    SH ZERO,PAPER OUT SIG OFF
                            :REM*12Ø
43Ø DATA SAMPLE PRINTOUT,PRINT
    AND VIEW                :REM*136
44Ø DATA END                :REM*187
45Ø IFG$(K)="END"THEN J3=K-1:GO
    TO48Ø                   :REM*47
46Ø G$(K)=" "+G$(K)+"{14 SPACEs
    }":G$(K)=LEFT$(G$(K),19)
                            :REM*99
47Ø K=K+1:GOTO41Ø           :REM*69
48Ø FOR K=1 TO J3           :REM*42
49Ø HG$(K)=H$+G$(K)+N$:NEXT
                            :REM*18
5ØØ REM MAIN MENU           :REM*167
51Ø G=Ø:PRINT"{SHFT CLR}{CTRL 8
    }"                      :REM*2
52Ø PRINT H$(1);N$(2);N$(3);N$(
    4)                      :REM*156
53Ø FORK=1TOLL:PRINT"{COMD T}";
    :NEXT                   :REM*2Ø9
54Ø PRINT"{HOME}":FOR I=1TO21:P
    RINT:NEXT               :REM*232
55Ø IFA=128GOTO57Ø          :REM*156
56Ø PRINT"{CTRL 9} CURSOR RT TO
     SELECT, RETURN TO EXECUTE
    ":PRINT"{HOME}":GOTO59Ø
                            :REM*86
57Ø PRINT"{CTRL 9}{12 SPACEs}<C
    URSOR RIGHT> TO SELECT{12 S
    PACEs}<RETURN>";        :REM*136
58Ø PRINT"{CTRL 9} TO EXECUTE{1
    3 SPACEs}"CHR$(19):PRINT:PR
    INT                     :REM*24Ø
59Ø I=1:GOSUB68Ø:IF X$=R$ GOTO7
    3Ø                      :REM*78
6ØØ PRINTN$(1);H$(2);N$(3);N$(4
    )                       :REM*24Ø
61Ø I=2:GOSUB68Ø:IF X$=R$ GOTO7
    3Ø                      :REM*181
62Ø PRINTN$(1);N$(2);H$(3);N$(4
    )                       :REM*128
63Ø I=3:GOSUB68Ø:IF X$=R$ GOTO7
    3Ø                      :REM*156
64Ø PRINTN$(1);N$(2);N$(3);H$(4
    )                       :REM*144
65Ø I=4:GOSUB68Ø:IF X$=R$ GOTO7
```

```
    3Ø                    :REM*139
66Ø PRINTH$(1);N$(2);N$(3);N$(4
    )                     :REM*17
67Ø GOTO59Ø               :REM*248
68Ø GET X$:IF X$="" GOTO68Ø
                          :REM*4Ø
69Ø IF X$=Z$ THEN PRINT CU$;CU$
    ;CU$:RETURN           :REM*121
7ØØ IFX$=R$ THEN RETURN:REM*14Ø
71Ø PRINT"{SHFT CLR}":PRINTTAB(
    1Ø)"{CTRL 9} PRESS CURSOR R
    IGHT OR RETURN"       :REM*4
72Ø FOR Y=1TO3ØØØ:NEXT:GOTO51Ø
                          :REM*37
73Ø ON I GOTO74Ø,76Ø,78Ø,8ØØ
                          :REM*251
74Ø GOSUB83Ø:IF G=1 GOTO51Ø
                          :REM*42
75Ø GOTO74Ø               :REM*68
76Ø GOSUB134Ø:IF G=1 GOTO51Ø
                          :REM*1Ø6
77Ø GOTO76Ø               :REM*94
78Ø GOSUB183Ø:IF G=1 GOTO51Ø
                          :REM*75
79Ø GOTO78Ø               :REM*112
8ØØ TA=INT(LL/2)-5        :REM*61
81Ø CLOSE5:PRINT"{SHFT CLR}":PR
    INT:PRINT:PRINT:PRINT:PRINT
    TAB(TA)"***END***":END
                          :REM*97
82Ø REM STYLE MENU        :REM*34
83Ø PRINT:TT=Ø:PRINT"{CTRL 5}":
    PRINTCU$:GOSUB238Ø    :REM*146
84Ø PRINT P$(1)           :REM*127
85Ø FOR K=2 TO J1:PRINT HP$(K):
    NEXT                  :REM*75
86Ø REM STYLE SELECTOR    :REM*5
87Ø FOR K=1 TO J1:GOSUB233Ø
                          :REM*65
88Ø IF X$=CD$ GOTO9ØØ     :REM*238
89Ø GOTO96Ø               :REM*21Ø
9ØØ PRINTCHR$(19):PRINT:PRINT:P
    RINT:IFK=1 GOTO92Ø    :REM*89
91Ø FORI=1TOK-1:PRINTCD$;:NEXT
                          :REM*126
92Ø IF K=J1 GOTO94Ø       :REM*16
93Ø PRINTHP$(K):PRINTP$(K+1):GO
    TO95Ø                 :REM*66
94Ø PRINT HP$(K):PRINTCHR$(19):
    PRINT:PRINT:PRINT:PRINTP$(1
    ):GOTO87Ø             :REM*19
95Ø NEXT                  :REM*6Ø
96Ø OPEN5,4,S:REM TRANSPARENT M
    ODE                   :REM*164
97Ø ON K GOSUB 99Ø,1ØØØ,1Ø3Ø,1Ø
    6Ø,1Ø9Ø,112Ø,115Ø,118Ø,121Ø
    ,124Ø,127Ø,13ØØ       :REM*196
98Ø CLOSE5:PRINT"{SHFT CLR}":RE
    TURN                  :REM*219
99Ø G=1:GOTO98Ø           :REM*1
1ØØØ A$(2)="ELITE, ":REM PICA I
    S DEFAULT             :REM*229
1Ø1Ø PRINT#5,C$"M"        :REM*36
1Ø2Ø RETURN               :REM*142
1Ø3Ø A$(3)="ITALICS, "    :REM*223
1Ø4Ø PRINT#5,C$;"4"       :REM*116
1Ø5Ø RETURN               :REM*172
1Ø6Ø A$(4)="CONDENSED, ":REM*94
1Ø7Ø PRINT#5,CHR$(15)     :REM*116
1Ø8Ø RETURN               :REM*194
1Ø9Ø A$(5)="PROPORTIONAL, "
                          :REM*182
11ØØ PRINT#5,C$;CHR$(112);CHR$(
    1)                    :REM*113
111Ø RETURN               :REM*224
112Ø A$(6)="EXPANDED, "   :REM*64
113Ø PRINT#5,C$"W1"       :REM*154
114Ø RETURN                :REM*7
115Ø A$(7)="EMPHASIZED, "
                          :REM*234
116Ø PRINT#5,C$"E"        :REM*134
117Ø RETURN               :REM*37
118Ø A$(8)="BOLDFACE, ":REM*129
119Ø PRINT#5,C$"G"        :REM*178
12ØØ RETURN               :REM*59
121Ø A$(9)="SUBSCRIPTS, "
                          :REM*36
122Ø PRINT#5,C$"S1"       :REM*216
123Ø RETURN               :REM*89
124Ø A$(1Ø)="SUPERSCRIPTS, "
                          :REM*251
125Ø PRINT#5,C$"SØ"       :REM*23Ø
126Ø RETURN               :REM*127
127Ø A$(11)="DOUBLE HIGH, "
                          :REM*186
128Ø PRINT#5,C$;CHR$(1Ø4);CHR$(
    1)                    :REM*5Ø
129Ø RETURN               :REM*157
13ØØ A$(12)="QUAD HIGH, "
                          :REM*58
131Ø PRINT#5,C$;CHR$(1Ø4);CHR$(
    2)                    :REM*1ØØ
132Ø RETURN               :REM*179
133Ø REM MARGINS MENU     :REM*234
134Ø TT=T:PRINT"{COMD 7}":GOSUB
    238Ø                  :REM*64
135Ø PRINTTAB(TT)M$(1)    :REM*138
136Ø FOR K=2 TO J2:PRINTTAB(TT)
    HM$(K):NEXT           :REM*234
137Ø REM MARGINS SELECTOR
                          :REM*16
138Ø FOR K=1 TO J2:GOSUB233Ø
                          :REM*126
139Ø IF X$=CD$ GOTO 141Ø:REM*62
14ØØ GOTO148Ø             :REM*199
141Ø PRINTCHR$(19):PRINT:PRINT:
    PRINT:IFK=1 GOTO143Ø
                          :REM*163
142Ø FORI=1TOK-1:PRINTCD$;:NEXT
                          :REM*126
143Ø IF K=J2 GOTO146Ø     :REM*246
144Ø PRINTTAB(TT)HM$(K):PRINTTA
    B(TT)M$(K+1):GOTO147Ø
                          :REM*226
145Ø PRINTTAB(TT)HM$(K):REM*179
146Ø PRINTCHR$(19):PRINT CD$;CD
    $;CD$;TAB(TT)M$(1):GOTO138
    Ø                      :REM*99
147Ø NEXT                  :REM*7Ø
148Ø OPEN5,4,S            :REM*249
149Ø ON K GOSUB 151Ø,153Ø,157Ø,
    161Ø,165Ø,171Ø,175Ø,179Ø
                           :REM*91
15ØØ CLOSE5:PRINT"{SHFT CLR}":P
    RINT:PRINT:RETURN     :REM*2Ø8
151Ø G=1:GOTO15ØØ:REM BLANK
                          :REM*13Ø
152Ø REM TOP MARGIN       :REM*12Ø
153Ø GOSUB18ØØ:PRINTTAB(L):INPU
    T"TOP MARGIN";TM      :REM*33
154Ø PRINT#5,C$;CHR$(114);CHR$(
    TM);:PRINT#5,CHR$(12):REM
    FORM FEED             :REM*127
155Ø RETURN               :REM*154
156Ø REM BOTTOM MARGIN    :REM*116
157Ø GOSUB18ØØ:PRINTTAB(L):INPU
    T"BOTTOM MARGIN";BM
                          :REM*167
158Ø PRINT#5,C$;CHR$(78);CHR$(B
    M)                    :REM*236
159Ø RETURN               :REM*194
16ØØ REM LEFT MARGIN      :REM*211
161Ø GOSUB18ØØ:PRINTTAB(L):INPU
    T"COLUMN NUMBER";LM:REM*86
162Ø PRINT#5,C$;CHR$(1Ø8);CHR$(
    LM)                   :REM*164
163Ø RETURN               :REM*234
164Ø REM RIGHT MARGIN     :REM*149
165Ø OPEN 1,4:PRINT#1,C$;"R";CH
    R$(Ø):CLOSE 1         :REM*188
166Ø REM DISABLE RIGHT MARGIN
                          :REM*193
167Ø GOSUB18ØØ:PRINTTAB(L):INPU
    T"COLUMN NUMBER";RM:REM*65
168Ø PRINT#5,C$;CHR$(81);CHR$(R
    M)                    :REM*198
169Ø RETURN               :REM*47
17ØØ REM LINE SPACING N/216 INC
    HES                   :REM*131
171Ø GOSUB18ØØ:INPUT"LINE SPACI
    NG N/216 INCHES - ENTER N"
    ;N                    :REM*67
172Ø PRINT#5,C$;CHR$(51);CHR$(N
    )                     :REM*225
173Ø RETURN               :REM*87
174Ø REM FORM FEED        :REM*163
175Ø GOSUB18ØØ:PRINTTAB(2Ø):INP
    UT"TOTAL MARGIN";TM:PRINT#
    5,C$;"N";CHR$(TM)     :REM*4Ø
176Ø PRINT#5,CHR$(12)      :REM*6
177Ø RETURN               :REM*127
178Ø REM ADD NEW COMMAND ROUTIN
    ES STARTING AT 179Ø
                          :REM*181
179Ø REM                  :REM*138
18ØØ PRINT"{HOME}":FOR J=1 TO J
    2-1:PRINT CD$:NEXT    :REM*34
181Ø RETURN               :REM*167
182Ø REM UTILITY MENU     :REM*1Ø3
183Ø TT=2*T:PRINT"{CTRL 6}":GOS
    UB238Ø                :REM*224
184Ø PRINTTAB(TT)G$(1)    :REM*114
185Ø FOR K=2 TO J3:PRINTTAB(TT)
    HG$(K):NEXT           :REM*117
186Ø REM UTILITY SELECTOR
                          :REM*24Ø
187Ø FOR K=1 TO J3:GOSUB233Ø
                          :REM*115
188Ø IF X$=CD$ GOTO 19ØØ:REM*41
189Ø GOTO197Ø             :REM*2Ø6
19ØØ PRINTCHR$(19):PRINT:PRINT:
    PRINT:IFK=1 GOTO192Ø
                          :REM*111
191Ø FORI=1TOK-1:PRINTCD$;:NEXT
                           :REM*2
192Ø IF K=J3 GOTO194Ø     :REM*241
193Ø PRINTTAB(TT)HG$(K):PRINTTA►
```

```
    B(TT)G$(K+1):GOTO196Ø
                        :REM*167
194Ø PRINTTAB(TT)HG$(K):REM*113
195Ø PRINTCHR$(19):PRINT:PRINT:
    PRINT:PRINTTAB(TT)G$(1):GO
    TO187Ø              :REM*152
196Ø NEXT               :REM*34
197Ø OPEN5,4,S          :REM*2Ø9
198Ø ON K GOSUB 2ØØØ,2Ø2Ø,2Ø6Ø,
    2Ø9Ø,211Ø,218Ø,226Ø
                        :REM*125
199Ø CLOSE5:PRINT"{SHFT CLR}":P
    RINT:PRINT:RETURN   :REM*2ØØ
2ØØØ G=1:GOTO199Ø       :REM*195
2Ø1Ø REM RESET PRINTER  :REM*251
2Ø2Ø PRINT#5,C$;CHR$(64);
                        :REM*169
2Ø3Ø FOR K=1 TO 12:A$(K)="":NEX
    T:REM CLEAR         :REM*1Ø2
2Ø4Ø RETURN             :REM*142
2Ø5Ø REM SLASH ZERO     :REM*29
2Ø6Ø PRINT#5,C$;CHR$(126);CHR$(
    1)                  :REM*99
2Ø7Ø RETURN             :REM*172
2Ø8Ø REM DISABLE PAPER OUT SIGN
    AL                  :REM*84
2Ø9Ø PRINT#5,C$;CHR$(56):REM*38
21ØØ RETURN             :REM*2Ø2
211Ø OPEN4,4:CMD4:REM SAMPLE PR
    INTOUT              :REM*137
212Ø IF A$(2)=""THEN A$(2)="PIC
    A, "                :REM*33
213Ø PRINT"THIS IS ";   :REM*45
214Ø FOR K=2 TO 12:PRINT A$(K);
    :NEXT:PRINT         :REM*39
215Ø PRINT"THE QUICK BROWN FOX
    JUMPS OVER THE LAZY DOG.
                        :REM*36
216Ø PRINT#4:CLOSE4     :REM*175
217Ø RETURN             :REM*1
218Ø GOSUB211Ø:REM VIEW PRINTOU
    T                   :REM*163
219Ø PRINT#5,C$;CHR$(74);CHR$(2
    16):REM PAPER UP    :REM*245
22ØØ IF A=128 GOTO222Ø :REM*199
221Ø FOR K=1TO 93ØØ:NEXT:GOTO22
    3Ø                  :REM*112
222Ø FORK=1TO 655Ø:NEXT:REM 128
     DELAY              :REM*12Ø
223Ø PRINT#5,C$;CHR$(1Ø6);CHR$(
    216):REM PAPER DOWN 1 INCH
                        :REM*55
224Ø RETURN             :REM*71
225Ø REM ADD NEW COMMANDS BELOW
                        :REM*255
226Ø REM                :REM*1Ø6
232Ø REM SELECTOR       :REM*195
233Ø GETX$:IF X$=""GOTO233Ø
                        :REM*46
234Ø IF X$=R$ THEN J=K:RETURN
                        :REM*21
235Ø IF X$<>CD$ AND X$<>R$ THEN
     233Ø               :REM*24Ø
236Ø RETURN             :REM*2Ø7
237Ø REM MENUS          :REM*29
238Ø PRINTCHR$(19):FOR I=1TO21:
    PRINT:NEXT          :REM*154
239Ø IF A=128 GOTO241Ø :REM*19Ø
24ØØ PRINT "{CTRL 9} CURSOR DN
    TO SELECT, RETURN TO EXECU
    TE ":GOTO243Ø       :REM*243
241Ø PRINT"{CTRL 9}{12 SPACEs}<
    CURSOR DOWN> TO SELECT{11
    SPACEs}";           :REM*2Ø5
242Ø PRINT"{CTRL 9} <RETURN> TO
     EXECUTE{14 SPACEs}"
                        :REM*81
243Ø PRINTCHR$(19):PRINT:PRINT
                        :REM*75
244Ø FORK=1 TO 19:PRINTTAB(TT)"
    {CTRL 9} ";:NEXT:PRINT
                        :REM*2Ø
245Ø RETURN             :REM*42
```

■

Attention Commodore 64 and 128 Owners — Tremendous Savings from Software Hut

Through a special purchase from Commodore Business Machines, we have a number of products at great pricing. Below is a list of products:

Commodore 128D Computer (new)	$319.95
Commodore 128D Computer (refurbished)	289.95
Commodore 64C Computer (new)	139.95
Commodore 1541 II Drive (new)	159.95
Commodore 1700 RAM Expansion 128K (new)	64.95
Commodore 1750 RAM Expansion 512K (new)	109.95
Commodore 1764 RAM Expansion 256K (refurbished)	94.95
Commodore 1581 Disk Drive 3.5" (new)	129.95
Commodore 1581 Disk Drive 3.5" (refurbished)	109.95
Commodore 1660 Modem 300 Baud (new)	19.95
Commodore 1670 Modem 1200 Baud (new)	49.95
Supra 2400 Baud Modem	119.95
Commodore 1702 Monitor (refurbished)	89.95
Commodore 1902 Monitor (refurbished)	129.95
64 & 64C Replacement Power Supply	29.95
64 & 64C Heavy Duty Replacement Power Supply	42.95
Xetec Jr. Graphics Printer Interface	36.95
Peak Modem Interface for Supra 2400 Modem	29.95
Winner M3 2-Button Mouse	35.95

All new products include Commodore's full 90 day warranty. Refurbished products are in like-new shape and in their original packaging. They have a 30 day warranty. Please call quickly as supplies are limited and on a first come first serve basis. We are an authorized Commodore Service Center repairing Commodore and Amiga products both in and out of warranty. Please contact us at the service number below for additional information and pricing.

Software Hut, Inc.
2534 S. Broad Street
Philadelphia, PA 19145

MasterCard VISA DISCOVER

Order Toll Free 1-800-848-0079
For Information 1-215-462-2268
For Repairs 1-215-462-0210

Dealer Inquiries Invited.
We ship via UPS. We accept for payment: Visa, MasterCard and Discover credit cards. We also ship COD, accepting Cash, Certified Check or Money Order. Shipping charges are $5.00 for the first item, and $2.00 for additional items. For monitors and computers, please add an additional $3.00. COD orders add an additional $4.00.

Free Software

Public domain and shareware programs are often overlooked as software that's high quality and inexpensive.

By STEPHEN DIRSCHAUER

Since the C-64's introduction, a voluminous library of commercial software has been available to run on it. Perhaps that's why most C-64 users have neglected another substantial source of programs: the public domain. Virtually thousands of C-64 and C-128 public domain programs are available, from disk utilities to arcade games, and they're all free. Who could ask for a better deal? Many inexpensive shareware programs also exist. In this article, I'll describe several popular public domain and shareware programs, as well as a few ways to obtain them.

Before I begin, a short explanation of terms is in order. A *public domain program* is just that: a program that has been donated to the public by its author. It can be copied or distributed in any manner, but it may not be sold legally, for one simple reason: No one owns it.

Another form of software, similar but not identical to public domain software, has no universally accepted name, but I like *free access software*. It's like public domain software with one exception: The author has decided to retain the copyright on the work. The program can still be distributed freely.

Shareware is similar to both public domain and free access software in one respect: It can be distributed in any way. Like free access software, the author retains the copyright on the work. However, a shareware author also expects some money from users. After a reasonable period of time to try out the program, the user must decide whether to stop using it or to send the author a shareware donation, usually in the range of $5 to $25. In return, the author will often send a manual or an expanded version of the program, available only to those who have sent in the donation. You might also come across variations on the shareware concept such as *charityware*. Be sure to read a program's documentation to find out exactly what it is.

Now I'll take you on a brief tour of a few of the better public domain and shareware programs available—the ones I feel best illustrate the variety and quality of the software. Rest assured, there's more where these came from!

Stereoplayer

Stereoplayer, Mark Dickenson's free access SID-player, is one of the best freely available programs for the C-64. It plays all normal and enhanced SID music files, but its many extras are what makes Stereoplayer special. For instance, a built-in turbo loader is included, as well as support for multiple drives. When you run the program, you'll be treated to an entertaining introduction, which I won't describe so as not to spoil the surprise. As its name suggests, Stereoplayer can play SIDs in stereo if you have an extra SID chip or a special cartridge, such as The SID Symphony Stereo Cartridge from Dr. Evil Laboratories (PO Box 3432, Redmond, WA 98073-3432).

BBI Basic Editor

BBI Basic Editor, by Alex Howell, is a handy little utility for Basic programmers. It weighs in at a meager 11 blocks, but don't let the small size deceive you—the program has several well-done features, my favorite being bidirectional scrolling. With it, you can scroll the screen up or down to view your Basic program without having to list it. You can also enter Basic lines up to three screen lines long without resorting to clumsy command abbreviations.

Juggler

The animation program, Juggler, is ►

ILLUSTRATED BY DAVID GARNER

just as impressive as its Amiga namesake, and it proves that the C-64 is still no graphics lightweight. It depicts a robotic juggler balancing three crystal spheres, all in high resolution. There are actually two C-64 versions of Juggler available. The author of the original, whose online persona is RATT, drew all the animation frames by hand. Jeff Litz later produced a faster version using the original's graphics. If you're interested in C-64 graphics, I'd strongly suggest you take a look at Juggler.

CS-DOS

There are also many public domain and shareware programs available for the C-128, and the great majority of them are of high quality. Chris Smeets' DOS shell, CS-DOS, is a case in point. It's best described as an alternative environment with an interface similar to that of CP/M or MS-DOS. Indeed, it offers many features of those operating systems that the standard Commodore DOS lacks. For example, CS-DOS can execute powerful batch files from disk, all the while preserving whatever is in memory. Included among the many CS-DOS files are a terminal program and a C-128 version of the popular ARC file compressor. (Smeets is also the author of the C-64 version of ARC.)

CS-DOS is shareware: You have one month to evaluate the program, and then you must send in a very reasonable shareware donation of $20 to honorably continue using it.

GeoWar

In addition to software for the 64 and 128 Native modes, there's a long list of GEOS public domain and shareware programs, from geoWrite utilities to animation programs. One excellent geoProgram is Lysle E. Shields' geoWar, a strategy game in the spirit of Risk. In fact, anyone who's ever played Risk will feel right at home here, with one to six players fighting to conquer the world. All selections are made via the standard GEOS point-and-click interface; you hardly need to touch the keyboard, except to save and load games. GeoWar is another shareware program, with a suggested donation of $10.

Sources

Now that I've described a few examples and, I hope, whetted your appetite for public domain and shareware programs, let's see how you can get them. There are, as I've said, several ways. The two most popular sources of public domain software are disk collections and telecommunications networks.

Most public domain and shareware programs are available on large networks, such as Q-Link and CompuServe (see Table 1), or on smaller, local bulletin board systems. In fact, all the programs mentioned above came from BBSs in my area. Besides the low cost (many BBSs are free, and commercial networks charge only a few dollars an hour), this method is by far the fastest. Many programs, even large ones, can be downloaded to your computer in just a few minutes—and all you need is a telephone line, terminal program and modem. (If you don't own a modem, this is the perfect excuse to get one!)

If you don't have a modem or live in a small town where there are no local BBSs, you may want to investigate the public domain and shareware disk collections offered by users' groups and private companies (see Table 1). They typically charge from six to ten dollars per disk, to cover the cost of the blank and the copying. The compilers of these disks have usually selected popular, high-quality programs, saving you the trouble of trying out a dozen mediocre programs before finding the one you want. And, of course, since public domain and shareware programs can be freely distributed, you can exchange copies with other C-64/128 owners.

Tips & Tricks

With the enormous number of public

Q-Link Sextet

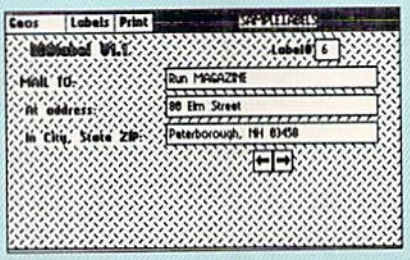
By SAUL COHEN

Club Caribe is a marvelous multiperson interactive fantasy game that's played online. Upon accessing the club, you choose an identity, then pick up the magic crystal and enter the doorway to begin your adventure. While you can be just an observer, it's much more fun to take part in touring the island. There are even guides to help you on your way. Dialogue is presented as cartoon captions.

Once you know the island, you can join search parties and competitions or simply sit back and have some fun! Believe me, you'll really feel like you're on an island adventure. To join Club Caribe, you need software that can be either ordered on disk from the Q-Link offices or downloaded from the network. After linking the software to your Q-Link disk, you're ready to log on.

Location: Just for Fun / Gaming Connection / Club Caribe / Club Caribe Travel Guide / Club Caribe Software / Download Club Caribe Software / Download the Club Caribe Linker or Download Club Caribe Data File / filenames: CC and CCDATA; from: Q-Link; date: 9/11/89; 20 and 593 blocks.

Labeler is a quick, three-line label program to enter, edit and save labels. It also prints single or multiple labels or the entire label file using your printer's normal font.



Enter, edit, save and print labels with Labeler.

Location: CSS / GEOS ARENA / Software Library / User Applications / Part 3 / filename: LABELER; from JohnW53; by: John White; date: 12/29/89; 13 blocks.

You'll need lightning reflexes to fend off an **Alien Attack**. This game for your C-128 in 40-Column mode features great graphics and smooth scrolling.

Location: CSS / Software Libraries / Browse C-128 Software / Game World / Games / Shoot-'em Up / filename: ALIEN.ARC; from:TerryR10; date: 1/16/90; 43 blocks.

Reconcile is a geoCalc template file that can help you reconcile your checkbook to your bank statement. The tem-

domain and shareware programs available, some good and some bad, you may wonder if there are ways to zero in on the very best. Unfortunately, there's no surefire method, but here are a few tips you can follow to ensure that your library contains more treasures than turkeys:

- Find out what the most popular programs are. Many other C-64 and C-128 users have searched before you, and you may hear them mentioning a certain program often. Or a program might be on the "top downloads" list maintained by many networks and even by some BBSs.
- Try to get as much information on a prospective program as possible. For example, many BBSs have online information detailing program features.
- Ask! If you're looking for a good database program, for instance, post a message on a local BBS or ask around at your users' group. Someone might already have just the program you need.

Above all, don't be afraid to explore the many public domain and shareware programs out there. The cost of doing so is low, and you might find some jewels that are just what you need. ■

Stephen Dirschauer enjoys telecommunicating, especially when downloading public domain and shareware programs.

Table 1. Sources of public domain software.

ONLINE SERVICES:

CompuServe
PO Box 20212
5000 Arlington Center Blvd.
Columbus, OH 43220
800-848-8199

Delphi
Three Blackstone St.
Cambridge, MA 02139
800-544-4005

GEnie
401 N. Washington St.
Rockville, MD 20850
800-638-9636

PeopleLink
3215 N. Frontage Rd., Suite 1505
Arlington Heights, IL 60004
800-524-0100

QuantumLink
8620 Westwood Center Drive
Vienna, VA 22180
800-392-8200

USERS' GROUPS/COMPANIES:

Fog International Computer Users' Group
PO Box 3474
Daly City, CA 94015
415-755-2000

JLH Company
PO Box 67021, Dept. 4
Topeka, KS 66667
913-234-3388

Poseidon Electronics
103 Waverly Place
New York, NY 10011
212-777-9515

TPUG (Toronto PET Users' Group), Inc.
5334 Yonge St., Box 116
Willowdale, Ontario
Canada M2N 6M2
416-253-9637

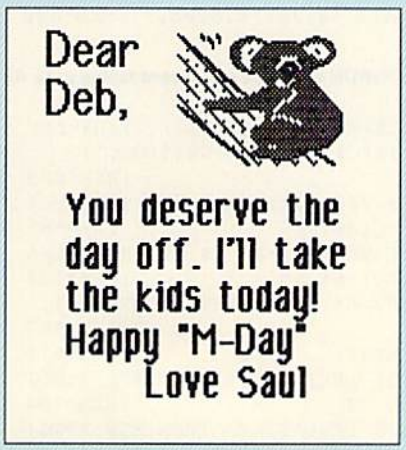
Here's a sampling of what's available from QuantumLink, one of many sources of public domain software.

plate consists of a series of predefined cells—all you have to do is enter your values and return to the first screen to see if your checkbook and the bank statement agree. Reconcile is by far the quickest and simplest template I have ever used!

Location: CSS / GEOS ARENA / Software Libraries / User Applications / Part 3 / filename: RECONCILE; from: RAB46; date: 12/30/89; 42 blocks.

GeoPrint is Roger Lu's fine card- and banner-making program. After dissolving and converting the working demo, enter your message and small graphics in a geoPaint form file that's been customized for your printer. Then use the master program to print your banner or the paint pages driver so you can further customize your creations. Ordering instructions are included in the information file that is presented before you download.

Location: CSS / GEOS ARENA / Software Libraries / User Applications / Part 3 / filename: GEOPRINTDEMO.SDA; from and by: Roger Lu; date: 12/16/89; 124 blocks.



Make special days memorable by creating cards with geoPrint.

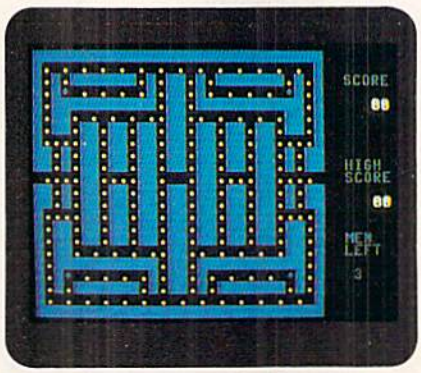
Online persona, Leven1, has scored again with a computer adaptation of one of my all-time favorite kid's games: **Tiddlywinks**! All you have to do is judge the distance and snap the chip into the shot glass! Think it's easy? Give it a try! You'll find that both you and your kids will be amused for hours!

Location: QCC / Software Library / Browse C-64 Software / Game World / Arcade / Other / filename: TIDDLYWINKS; from and by: Leven1; date: 1/29/90; 26 blocks. R

Saul Cohen, a GEOS and geoPublish teacher on Q-Link, also teaches a college-level desktop publishing course.

Plaque Man

Forget Pac Man—sink your teeth into this fast-action, arcade game!



By DAVID MARTIN

Plaque Man is a fun-filled, fast-paced C-64 derivation of the popular arcade game Pac Man. The object of the game is to maneuver the white tooth through the on-screen maze, collecting enamel molecules—the small white dots—and earning points as you go. Sounds simple, doesn't it? Well, it isn't, thanks to the ever-present plaque. The globs of plaque are after the tooth and, if they make contact, it dies.

The plaque's intelligence level makes it almost impossible to avoid. Your best bet is to eat one of the red fluoride pills located near the four corners of the maze. Absorbing a fluoride pill enables your tooth to destroy the plaque, and you earn extra points.

Those white dots of enamel will earn you points, but beware the ever-present plaque!

You begin the game with three teeth. After completing a level without losing all three, the action speeds up, and you earn an extra tooth.

Type in Listing 1, using *RUN*'s Checksum program to look for typing errors, and save it to a freshly formatted disk. Then type in Listing 2, also using the Checksum program, and run it to create the Plaque Man machine language program called DM. To play, plug a joystick into port 2; then load and run Listing 1 to load and boot the machine language program.

That's all there is to it. Just remember the Golden Rule: Brush often and take your fluoride pills! Ⓡ

David Martin enjoys using his Commodore computers to write utilities, to program and to telecommunicate.

Running Instructions: **Type in Listing 1 and save it to disk. Type in Listing 2, save it to disk and run it to create DM. Load and run Listing 1 to boot DM.**

Listing 1. Plaque Man boot program. (Available on ReRUN disk. See order card facing page 48.)

```
1 REM BOOT DATAMAN      :REM*136
2 DATA 169,8,162,8,16Ø,8,32,186
  ,255                  :REM*1Ø4
3 DATA 169,2,162,9Ø,16Ø,3,32,18
  9                     :REM*57
4 DATA 255,169,Ø,32,213,255,134
  ,45,132               :REM*131
5 DATA 46,76,16,8,68,77:REM*25Ø
6 FORI=828TO859:READX:POKEI,X:N
  EXT                   :REM*91
7 SYS828                :REM*137
```

Listing 2. MAKE.PLAQUE ML program. (Available on ReRUN disk. See order card facing page 48.)

```
Ø REM THIS LIST 1 CREATES (AND
  SHOULD NOT BE CALLED) DM
                        :REM*72
5 OPEN 8,8,8,"DM,P,W"   :REM*244
6 CT=Ø:PRINT"{SHFT CLR}":REM*56
1Ø READ A$:IF A$="-1" THEN CLOS
  E8:PRINT:PRINT"ALL DONE!":EN
  D                     :REM*129
12 PRINT"{HOME}READING LINE "+S
  TR$(CT):CT=CT+1       :REM*141
15 IF LEN(A$)<62 THEN 55
                        :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
  2Ø)+MID$(A$,43,2Ø)    :REM*242
25 FOR I=1 TO 3Ø        :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                        :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55             :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55             :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                        :REM*67
5Ø NEXT:GOTO 1Ø         :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
  O 7Ø                  :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
  A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
  )):GOTO 7Ø            :REM*176
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
  Ø)+RIGHT$(A$,LEN(A$)-42)
                        :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                        :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55             :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55             :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                        :REM*148
95 NEXT:GOTO 1Ø         :REM*16Ø
1ØØ REM HEX DATA FOR PLAQUEMAN ►
```

RUN it right: **C-64; joystick**

UTILITIES UNLIMITED, Inc.

P.O. BOX 532
North Plains, OR 97133

If you wish to place your order by phone

CALL (503) 647-5611 24 Hrs A DAY
FAX (503) 648-8992

GRAPHIC PACK.....$24.95

Our best selling graphic programs plus more, all on one disk. **Graphic label maker, Photo-Copy, Super Label, Converter** (converts Print Shop to Print Master), and **Sprite Editor.** Plus we'll add 60 graphics.

THE 128 SUPERCHIP - A, B or C (another first)

A — There is an empty socket inside your 128 just waiting for our **Super Chip** to give you 32K worth of great Built-in Utilities, all at just the Touch of a Finger. You get built-in features: **Files Copier, Nibbler, Track & Sector Editor, Screen Dump,** and even a 300/1200 baud **Terminal Program** that's 1650, 1670 and Hayes compatible. Best of all, it doesn't use up any memory. To use, simply touch a function key, and it responds to your command.

B — HAS SUPER 81 UTILITIES, a complete utility package for the 1581. Copy whole disks from 1541 or 1571 format to 1581. Many options include 1581 disk editor, drive monitor, Ram writer and will also perform may CP/M & MS-DOS utility functions.

C — "C" IS FOR COMBO and that's what you get. A super combination of both chips A and B in one chip, switchable at a great savings to you. **All Chips Include 100 Parameters FREE!**

Chips A or B: **$29.95 each** Chip C: **$44.95 each.**

UTILITIES UNLIMITED SOFTWARE COMBO -PAK
CHECK THIS OUT ! ! !
A $169.95 VALUE FOR ONLY $49.95

THIS COMBO INCLUDES....

1.	PARAMETER CONSTRUCTION SET	REG.	$24.95
2.	N/D CODER		$14.95
3.	D COMPILER		$14.95
4.	MASTER LOCK		$ 9.95
5.	800 PARAMETERS		$39.95
6.	1000 GRAPHICS		$29.95
7.	GRAPHICS UTILITIE PACK		$24.95

IF YOU HAVE WONDERED WHAT THESE PROGRAMS ARE AND WERE JUST AFRAID TO TRY NOW IS THE TIME, TAKE ADVANTAGE OF THIS REALLY LOW PRICE.

64 Doctor

A professional diagnostic cartridge for your Commodore 64

- Simply insert cartridge & port connectors
- Tests serial, user and control ports
- Allows for a full keyboard test
- Many chips tested including NMI & IRQ
- Sound channels and graphics tested
- BASIC Kernal & ROM tested
- Screen table clearly displays the results
- All defective chips are highlighted
- Location and CBM part numbers displayed
- Buy the parts and repair it yourself
- Or tell your dealer what's wrong & where

ONLY.....$69.95

SUPER-CARD +

A BACK-UP TOOL FOR THE 1990'S

As you may know, other companies have thrown in the towel. A "LAST" version of software will never happen with Utilities Unlimited! Technology changes, machines change, new peripherals become available, and we REFUSE to leave our valued customers out in the cold! In the last 4 years Super-Card has evolved into the best backup system you can get...PERIOD! We have NO plans to discontinue such a fine product! It is true that we now have an AMIGA product line, including an Amiga Super-Card. We have, by no means, abandoned the 64/128 product line that is so valuable to our company.

Introducing Version 5 of the Super-Card+ disk copying system. The last release? No! The best release? Yes! Just look at these features, and compare them to the "LAST" version of the competitor's product:

NEW Fast Copier and ALL utilities now support the 1581!
NEW 64K video RAM and REU support for ALL copiers!
NEW Block Allocation Map display (BAM)!
NEW ML Drive Monitor!
NEW Disk Compare!
NEW Fast file copier. The BEST there ever will be! Supports 1541, 1571, 1581 disk drives. Support 3 transfer modes: SLOW serial, FAST serial, and PARALLEL! You can mix and match drives and transfer modes!
NEW GCR Editor V2 - For the experienced programmer. Allows the reading/writing of WHOLE tracks data, enabling you to "see" what the protection is! New version actually gives you the settings you need to copy the disk with. These settings can be imported into a COPIER FILE!
NEW Copier Construction Set (sm) - Create custom files yourself! When used in conjunction with our ADJUSTMENT sheet or GCR Editor, you can make COPIER FILES to easily duplicate any disk. You can also "sector edit" a disk at the same time!
NEW Turbo GCR Nibbler - The replacement for ALL our previous nibblers. Protection schemes like V-MAX!. Wondermat, Xmeg, etc. giving you headaches? This the answer!

MAKE YOUR BACK-UP THE DAY YOU BUY SOFTWARE AT THE STORE. ONE BOARD FITS ALL DRIVES. SOME SOLDERING MY BE REQUIRED ON SOME DRIVES

SUPER CARD+ $59.95
DUAL VERSION.....$109.90
VERSION 5 SOFTWARE.....$5.00

• SUPER TRACKER •

At last an easy way to find out where the protection really is. **Super Tracker** will display the location of your drive head while you are loading a piece of software. This information will be very useful to find where the protection is. Super Tracker has other useful options such as track and half track display, 8 and 9 switch, density display, write protect on/off. This incredible little tool is encased in a handsome box that sits on top of your drive. Works with all C.64/128 and most C/64 compatible drives. Some minor soldering will be required.

Super Tracker.....**$69.95**

• SUPER CARTRIDGE •

The **Ultimate Utility Cartridge** packed full of useful utilities. Super fast file copier, nibbler, sector editor, graphic label maker, just to mention a few. 128K of software at your finger tips. Super Cartridge can be shut off and uses no memory.

Super Cartridge **$49.95**

VIDEO BYTE II - the only FULL COLOR! video digitizer for the C-64, C-128

Introducing the world's first **FULL COLOR!** video digitizer for the Commodore C-64, 64-C, C-128 & 128-D computer. **VIDEO BYTE** can give you digitized video from your VCR, B/W or COLOR CAMERA or OFF THE AIR or CABLE VIDEO (thanks to a fast! 2.2 sec. scan time). New version 3.0 software features full RE-DISPLAY with MULTI CAPTURE MODE, MENU SELECT PRINTING, EXPANDED COLORIZING FEATURES, SAVE to DISK FEATURE AND MUCH MORE!

FULL COLORIZING! is possible, due to a unique SELECT and INSERT color process, where you can select one of 15 COLORS and insert that color into one of 4 GRAY SCALES. This process will give you over 32,000 different color combinations to use in your video pictures. **SAVES as KOALAS!** Video Byte II allows you to save all your pictures to disk as FULL COLOR KOALA'S. After which (using Koala or suitable program) you can go in and redraw or recolor your V.B. pic's. **LOAD and RE-DISPLAY!** Video Byte II allows you to load and re-display all Video Byte pictures from inside Video Byte's menu. **MENU DRIVEN!** Video Byte II comes with an easy to use menu driven UTILITY DISK and digitizer program (64 MODE ONLY). **COMPACT!** Video Byte II's hardware is compact! In fact no bigger than your average cartridge! Video Byte comes with it's own cable. **INTEGRATED!** Video Byte II is designed to be used with or without EXPLODE! V5.0 color cartridge. Explode! V5.0's menu will return you to VIDEO BYTE II's menu. Explode! V5.0 is the **PERFECT COMPANION!** Video Byte II users are automatically sent **FREE SOFTWARE** updates along with new documentation, when it becomes available. **PRINT!** Video Byte II will printout pictures in BLACK and WHITE GREY SCALE to most printers. However, when used with Explode! V5.0, your printouts can be done IN FULL COLOR 8x11's on the **RAINBOW NX-1000, RAINBOW NX-1000C, JX-80, Seikosha3000 AI. (OKIDATA 10/20's (print larger 6"by9") USER SLIDE SHOW program w/auto or manual display is standard with VIDEO BYTE program. And can be backed up!)**

ONLY $79.95

Why DRAW a car, airplane, person or for that matter. . . anything when you can **BYTE it . . . Video Byte it instead.**

NEW! SUPER CARTRIDGE By The Soft Group EXPLODE! V.5

The **MOST POWERFUL, DISK DRIVE and PRINTER CARTRIDGE** ever produced for the COMMODORE USER. Super **USER FRIENDLY** with all the features most asked for. New FEATURES. . . (a) Faster non-blanking FASTLOAD. (b) MIRROR imaging of all HI-RES screens. (c) 4 Way color selection with insert, for all HI-RES screens. (d) Infinite FILE COPY for all SEQ. & PRG. files, copy your file only once, then write that file to as many disks as you like. . . great for single file copying by small user groups. (e) **FULL COLOR PRINTING of ALL COLOR HI-RES & MULTI-COLOR SCREENS to ALL COLOR DOT MATRIX PRINTERS** (not for INK JET printers). (f) Direct ONE KEY access back to VIDEO BYTE software thru EXPLODE! V5.0's MENU. (g) Supports all popular printer interfaces. (h) FREE upgraded utility disk.

ONLY $44.95

ADD $4.00 Shipping & Handling
ADD $3.50 for C.O.D.
in USA Only
VISA and MasterCard Accepted
Allow 3-4 Weeks for Delivery

WORLD'S BIGGEST PROVIDER OF C64/128 UTILITIES

Software Submissions Invited
We are looking for HACKER STUFF: print utilities, parameters, telecommunications, and the unusual.
We now have over 1,000 parameters in stock!

PLAQUE 1

PLAQUE MAN

```
    64                          :REM*189
101 DATA 100820370820 3E08AD00*D
    01865FB38E9013 8C920*8D00D0A
    D01D01865FC38               :REM*136
102 DATA E9013 8C9308D01D04C91*0
    820C8122065116 0A91F*8D15D0A
    99C8DF807A988               :REM*46
103 DATA 8D00D0A9888D01D0A901*8
    D27D02071086 0AD00DC*2904D00
    320BC086 0AD00              :REM*18
104 DATA DC2902D00320E4086 0A9*0
    78544A90A8545A9078 5*FDA9008
    5FEA9C085FF60               :REM*16
105 DATA AD00DC2901D00320 1D09*6
    0E6FA2098 0FA5FA25FD*C5FDD02
    BE6FEA5FE2903               :REM*35
106 DATA 85FEA5FF18A9988DF807*4
    CFE08AD00DC2908D003*20F1086
    0A9 085FBA901               :REM*177
107 DATA 85FCA9C885FF60A644A0*3
    F88D0FDCAD0F8AD00D0*2907D0B
    7AD01D02907D0               :REM*108
108 DATA B04C610BA90185FBA902*8
    5FCA9CC85FF60A90285*FBA9018
    5FCA9C085FF60               :REM*235
109 DATA C6F8A5F8290 3D014E6F9*A
    5F92907A9028DA4D88D*BBD88DF
    CDA8D13DB4C16               :REM*146
110 DATA 08A90185FBA900 85FCA9*C
    485FF60A200BD0004C9*20D005A
    941900004BD00               :REM*43
111 DATA 05C920D005A9419D0005*B
    D006C920D005A9419D*0006BD0
    0070C920D005A9              :REM*123
112 DATA 419D007CAD0CDA200BD*0
    004C941D005A9019D00*D8BD000
    5C941D005A901               :REM*18
113 DATA 9D00D9BD0006C941D005*A
    9019D00DABD0070C941*D005A90
    19D00DBCAD0CD               :REM*204
114 DATA 6078A9018D0DDCA93385*0
    1A0FFB900D09900 20B9*00D1990
    021B900D49900               :REM*252
115 DATA 24B900D5990 02588C0FF*D
    0E3A93785 01A9818D0D*DC586 0A
    D11D00910 8D11              :REM*55
116 DATA D0A9188D18D0A9008D21*D
    0A900 8D20D0A900A535*29F04A4
    A4A4A18693 08D              :REM*6
117 DATA 2706A53429F04A4A4A4A*1
    8693 08D28 06A53329F0*4A4A4A4
    A18693 08D2906              :REM*39
118 DATA A53229F04A4A4A4A1869*3
    08D2A06A53129F04A4A*4A4A186
    9308D2B06A53 0              :REM*88
119 DATA 29F04A4A4A4A18693 08D*2
    C0660A200BD39139D00*04BDA41
    59D000 5BD3914              :REM*45
120 DATA 9D0006BDA4169D0007A9*0
    69D00D89D00D99D00DA*9D00DBC
    AD0D72 02A092 0             :REM*49
121 DATA 9509209C909A9018D27DA*8
    D28DA8D29DA8D2ADA8D*2BDA8D2
    CDA8D2DDAA93 0              :REM*244
122 DATA 8D2D06AD2706C93 0D03C*A
    9608D2706AD28 06C93 0*D03 0A96
    08D28 06AD29 06             :REM*34
123 DATA C93 0D024A9608D29 06AD*2
    A06C93 0D018AD2A06C9*3 0D011A
    96 08D2A 06AD2B             :REM*159
124 DATA 06C93 0D005A9608D2B06*A
    900852AA94 08DA4 048D*BB048DF
    C068D13 07A51F              :REM*89
125 DATA 18693 08D1A074C91 0D86*E
    0A51238E91 08512A513*38E93 08
    513A5124A4A4A               :REM*4
126 DATA 8512A5134A4A4A8513A9*0
    48515A613CAA900 1869*289 00 2E
    615CAD0F61865               :REM*32
127 DATA 129002E6158514A000B1*1
    48516A027B1148517A0*28B1148
    518A029B11485               :REM*73
128 DATA 19A05 0B114851AA6E06 0*A
    D00D08512AD01D08513*20E9AA
    518C94 0D00320              :REM*245
129 DATA E80BA518C941D0114C0E*0
    CA51BF0DDC61BA9208D*04D44C4
    20BA960A02891               :REM*44
130 DATA 14A516C960F004C9431 0*0
    32086 08A517C960F004*C9431 00
    325B08A519C9                :REM*230
131 DATA 60F004C9431 00320B1 08*A
    51AC960F004C9431 003*2066 08A
    5FBC902D028A5               :REM*118
132 DATA 19C960F056C9433052A9*0
    185FB4C0B0CA5FCC902*D034A51
    AC960F03FC943               :REM*1
133 DATA 303BA90185FC4C0B0CA5*F
    BD0E5A517C960F02AC9*433 0264
    CB90BA900 85F1              :REM*135
134 DATA A54585F0A9078D27D0A9*0
    885 0A60A5FCD00DA516*C960F00
    7C9433034CD0                :REM*93
135 DATA 0B4C1608E62AA52AC9DC*D
    022E61F2037 0A204B11*4C210CC
    644A544D004A9               :REM*101
136 DATA 018544C645A545D004A9*0
    185454C16082 09A11A5*1BD02CE
    61CA51C29 0385              :REM*92
137 DATA 1CAABD92118D00D4A907*8
    D01D4A9228D05D4A9D1*8D06D4A
    9218D04D4A90F               :REM*56
138 DATA 8D18D4A902851B4C6F0B*A
    900850 2AD15D02902F0*26AD02D
    01869 0738ED00              :REM*81
139 DATA D09 01A38C90FB015ADO3*D
    01869 0738ED01D09009*C90FB00
    5A502 09026 0AD             :REM*85
140 DATA 15D02904F026AD04D018*6
    90738ED00D09 01A38C9*0FB015A
    D05D018690738               :REM*142
141 DATA ED01D09009C90FB005A5*0
    209046 0AD15D02908F0*26AD06D
    01869 0738ED00              :REM*204
142 DATA D09 01A38C90FB015ADO7*D
    01869 0738ED01D09009*C90FB00
    5A502 09086 0AD             :REM*46
143 DATA 15D0291 0F026AD08D018*6
    90738ED00D09 01A38C9*0FB015A
    D09D018690738               :REM*136
144 DATA ED01D09009C90FB005A5*0
    2091 06 0A9006 0A99C8D*F9078DF
    A078DFB078DFC               :REM*69
145 DATA 07A9058D28D0A9058D29*D
    0A90 58D2AD0A9058D2B*D0A9018
    5FB85FCA9888D               :REM*81
146 DATA 00D0A9888D01D0A90085*F
    08D0BD4A900 85F0A944*8516851
    A2 0D411A9988D              :REM*169
147 DATA F80785FFA9018D27D0A9*2
    08D04D4AD1ED0A9 0885*0A60A90
    185E5A900 85E4              :REM*180
148 DATA 60A9208D02D08D06D0A9*F
    88D04D08D08D0A9D88D*09D08D0
    7D0A9408D03D0               :REM*97
149 DATA 8D05D0A90285E285E5A9*0
    185E385E485E685E9A9*0085E78
    5E8202 9D06 0A0             :REM*54
150 DATA 20A20898186AA82D15D0*F
    018BD00D029 07F00A60*A901185E
    7A90285E660BD               :REM*45
151 DATA 01D029 07D0EFCACAD0DB*A
    900 60A90185E3A90285*E260AD0
    2D029 07D007AD              :REM*82
152 DATA 03D029 07F0286 04CE70E*A
    90185E9A900 85E860A2*08BD01D
    038E9011875E1               :REM*156
153 DATA 9D01D0CAD0F14C000EA5*F
    A29 07F0E660A208BD00*D085DE8
    512BD01D085DF               :REM*177
154 DATA 8513B5E085D8B5E185D9*2
    0E70AA5FA4A4A4AA8B9*13 08290
    0F0B1A900 85DA              :REM*254
155 DATA 85DB85DC85DDA5D8C902*F
    038A5DAD034A517C960*F004C94
    3102AA900 85D8              :REM*186
156 DATA A90185D94CFB0EA5D9C9*0
    2F038A5DCD034A516C9*60F004C
    9431 02AA90185              :REM*218
157 DATA D8A900 85D94CFB0EA5D8*C
    900F0DBA5DBD0D7A519*C960F00
    4C9431 0CDA902              :REM*110
158 DATA 85D8A90185D94CFB0EA5*D
    9C900F093A5DDD08FA5*1AC960F
    004C9431085A9               :REM*129
159 DATA 0185D8A90285D94CFB0E*4
    C310FBD00D038CD00D0*901AA90
    185DBA900 85DA              :REM*69
160 DATA 4C120FA5D895E0A5D995*E
    1CACAF0DD4C380EA901*85DAA90
    085DBBD01D038               :REM*34
161 DATA CD01D0B00BA90185DCA9*0
    085DD4C2E0FA90185DD*A900 85D
    C4C680EA5F0F0               :REM*186
162 DATA 0160 20CB0DC900F00160*A
    D15D02902D00DA9208D*02D0A94
    08D03D020F70D               :REM*247
163 DATA AD15D02904D00DA9F88D*0
    4D0A9408D05D02088 0D*AD15D02
    908D00DA9208D               :REM*27
164 DATA 06D0A9D88D07D020E00D*A
    D15D0291 0D00DA9F88D*08D0A9D
    88D09D020120E               :REM*80
165 DATA A91F8D15D0A9108 51A60*A
    5F0F03CC6F1A5F1D002*C6F08D0
    7D4A91F8D08D4               :REM*132
166 DATA A900 8D0CD4A9808D0DD4*A
    9418D0BD4A5F0C9041 0*09A5F1C
    980F00 38D27D0              :REM*242
167 DATA A5F0D00AA9018D27D0A9*0
    08D0BD4A20ABDFECFC9*FFD005A
    91F9DFECFC91E               :REM*167
168 DATA D005A9FE9DFECFCACAD0*E
    7206E0CF03BA6F0D04A*C61FA92
    18D04D4A27FA0               :REM*135
169 DATA 4F8C00D488D0FA8E01D4*A
    0FF88D0FDCAD0ED20DC*0A204B1
```

Plaque II

PLAQUE MAN

```
    1A51FDØ11A2Ø7          :REM*238
17Ø DATA BD1FØØ38DD2FØØDØØ9CA*D
    ØF44CØ7114C2FØE9ØF8*A2Ø7BD1
    FØØ9D2FØØCADØ          :REM*238
171 DATA F74CØ7114D15DØ8D15DØ*F
    8A5ØA182A85ØA186522*8522Ø1
    9A52318691Ø85          :REM*4
172 DATA 239Ø1ØA52418691Ø8524*9
    ØØ7A52518691Ø8525D8*2ØD411A
    9218DØ4D4A914          :REM*224
173 DATA AØ6ØA25FCADØFD8CØ1D4*8
    8DØF518E9Ø1DØEEA92Ø*8DØ4D44
    C2FØEA2Ø7A9ØØ          :REM*199
174 DATA 9D1FØØCADØFAA9Ø3851F*2
    Ø4B11ADØØDC291ØDØF9*A9Ø7854
    4A9ØA85452Ø37          :REM*89
175 DATA ØA4C16Ø82ØØ7Ø1ØDØ52Ø*2
    Ø2Ø2ØØF16Ø512Ø2Ø2Ø*2Ø1Ø12Ø
    513132Ø2Ø2ØØ6          :REM*27
176 DATA Ø912Ø52Ø2Ø2Ø2ØØ21514*1
    4ØFØE2Ø2Ø2Ø2Ø2Ø2Ø2Ø*2Ø2ØØ8A
    9ØØ8DEE1ØBDBE          :REM*247
177 DATA 1Ø9918Ø7EEEE1ØE8C8A9*Ø
    8CDEE1ØDØEE6ØA9AØ8D*F81ØA9Ø
    68DF91ØA2ØØAØ          :REM*16Ø
178 DATA ØØ2ØEF1ØA2Ø8AØ282ØEF*1
    ØA228AØ5Ø2ØEF1Ø4C29*11A9Ø78
    DF91ØA9188DF8          :REM*56
179 DATA 1ØA21ØAØØØ2ØEF1ØA218*A
    Ø282ØEF1ØA22ØAØ5Ø2Ø*EF1Ø4C9
    81ØA9Ø5A2FFAØ          :REM*135
18Ø DATA FF88DØFDCADØF838E9Ø1*D
    ØF16ØØØØØ183C3C18ØØ*ØØA2Ø7A
    9ØØ9D1FØØ9D2F          :REM*3Ø
181 DATA ØØCADØF7A9Ø3851F2Ø37*Ø
    AADØØDC291ØDØF9A9ØF*8D18D4A
    9218DØ4D4A9FØ          :REM*1Ø2
182 DATA 8DØ6D4A2ØC6Ø6Ø1F6Ø1F*8
    Ø158Ø15F8A52Ø18691Ø*852Ø5Ø2
    EA52118691Ø85          :REM*72
183 DATA 219Ø25A52218691Ø8522*9
    Ø1CA52318691Ø8523Ø*13A5241
    8691Ø8524ØØA           :REM*125
184 DATA A52518691Ø8525ØØ2ØØ*5
    8D8A52529FØ4A4A4A4A*1869Ø8
    DE7Ø4A52429FØ          :REM*35
185 DATA 4A4A4A4A1869Ø8DE8Ø4*A
    52329FØ4A4A4A4A1869*3Ø8DE9Ø
    4A52229FØ4A4A          :REM*217
186 DATA 4A4A1869Ø8DEAØ4A521*2
    9FØ4A4A4A4A1869Ø8D*EBØ4A52
    Ø29FØ4A4A4A4A          :REM*75
187 DATA 1869Ø8DECØ4A9Ø18DE7*D
    88DE8D88DE9D88DEAD8*8DEBD88
    DECD88DEDD8A9          :REM*181
188 DATA 3Ø8DEDØ4ADE7Ø4C93ØDØ*3
    CA96Ø8DE7Ø4ADE8Ø4C9*3ØDØ3ØA
    96Ø8DE8Ø4ADE9          :REM*24Ø
189 DATA Ø4C93ØDØ24A96Ø8DE9Ø4*A
    DEAØ4C93ØDØ18ADEAØ4*C93ØDØ1
    1A96Ø8DEAØ4AD          :REM*18
19Ø DATA EBØ4C93ØDØØ5A96Ø8DEB*Ø
    46ØØØØØØØØØØØØØØØ*ØØØ38Ø
    ØØØ7CØØØØFEØØ          :REM*3
191 DATA ØØ92ØØØØFEØØØØ6CØØØØ*F
    EØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ          :REM*147
192 DATA ØØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØADØEDC29*FE8DØED
    CA5Ø129FB85Ø1          :REM*53
193 DATA AØØØB9ØØDØ99ØØ2ØB9ØØ*D
    199ØØ21B9ØØD299ØØ22*B9ØØD39
    9ØØ23B9ØØD499          :REM*228
194 DATA ØØ24B9ØØD599ØØ25C8DØ*D
    9A5Ø1Ø9Ø485Ø1ADØEDC*Ø9Ø18DØ
    EDCAØØØA9FF99          :REM*2Ø8
195 DATA 1822B97Ø2199Ø822B95D*1
    199ØØ22C8CØØ8DØEAAØ*ØØB9881
    299ØØ26B93915          :REM*38
196 DATA 99ØØ27C8CØ4ØDØEF6Ø6Ø*6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*6Ø6Ø6Ø6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø           :REM*227
197 DATA 6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*4343434
    3434343434343          :REM*2Ø8
198 DATA 434343434343434343*4
    343434343434343434*6Ø6Ø6Ø6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø           :REM*1Ø8
199 DATA 43416Ø416Ø416Ø416Ø41*6
    Ø416Ø416Ø416Ø416Ø41*6Ø416Ø4
    16Ø416Ø416Ø43          :REM*57
2ØØ DATA 6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*4
    341434143434343434*4341434
    1434341434143          :REM*18
2Ø1 DATA 434343434343414341 43*6
    Ø6Ø13Ø3ØF12Ø56Ø6Ø6Ø*4341434
    Ø6Ø416Ø416Ø41          :REM*2Ø
2Ø2 DATA 6Ø41434143434143416Ø*4
    16Ø416Ø416Ø4Ø434143*6Ø6Ø6Ø6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø           :REM*78
2Ø3 DATA 434143434343434343*4
    343434143434143434*4343434
    3434343434143          :REM*185
2Ø4 DATA 6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*4
    341434341 6Ø416Ø416Ø*416Ø414
    1436Ø6Ø6Ø6Ø6Ø          :REM*16
2Ø5 DATA 6Ø6Ø6Ø6Ø4343414341 43*4
    341434341434341 4343*4143434
    1434341434341          :REM*241
2Ø6 DATA 434143436Ø6Ø6Ø6Ø6Ø3Ø*3
    Ø6Ø6Ø6Ø434141414143*4341434
    3414343414343          :REM*244
2Ø7 DATA 414343414343414341 41*4
    141414361Ø6Ø6Ø6Ø6Ø6Ø*6Ø6Ø6Ø6
    Ø434143434143          :REM*48
2Ø8 DATA 434143434143434143 43*4
    143434143434143434 41*4343414
    36Ø6Ø6Ø6Ø6Ø6Ø           :REM*178
2Ø9 DATA 6Ø6Ø6Ø6Ø4341434341 43*4
    341434341434341 4343*4143434
    1434341434341          :REM*249
21Ø DATA 434341436Ø6ØØD5ØE6Ø*6
    Ø6Ø6Ø6Ø434143434316Ø*416Ø416
    Ø416Ø41414343          :REM*95
211 DATA 41416Ø416Ø416Ø416Ø41*4
    343414361Ø6ØØCØ5Ø614*6Ø6Ø6Ø6
    Ø434143434343          :REM*43
212 DATA 434343434343434 1434*3
    143434343434343434*4343414
    36Ø6Ø6Ø6Ø6Ø6Ø           :REM*141
213 DATA 6Ø6Ø6Ø6Ø4341434Ø6Ø41*6
    ØØØØØØØØØØØØØØØØØ*ØØ7CØØØ
    ØFEØØØØ92ØØØØ          :REM*6Ø
214 DATA FEØØØØC6ØØØØFEØØØØ54*Ø
    ØØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ          :REM*125
215 DATA ØØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ          :REM*221
216 DATA ØØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØ4341          :REM*255
217 DATA 416Ø416Ø416Ø416Ø4143*4
    341436Ø6Ø6Ø6Ø6Ø6Ø6Ø*6Ø6Ø6Ø4
    3414343414343          :REM*125
218 DATA 414343414343414341 41*4
    343414343414343414 3*4341436
    Ø6Ø6Ø6Ø6Ø6Ø6Ø           :REM*139
219 DATA 6Ø6Ø6Ø434141414143 43*4
    143434143434143434 1*4343414
    3434143434141          :REM*125
22Ø DATA 414143636Ø6Ø6Ø6Ø6Ø6Ø*6
    Ø6Ø6Ø43434143414343*4143434
    1434341434341          :REM*185
221 DATA 434341434341434341 43*4
    143436Ø6Ø6Ø6Ø6Ø6Ø6Ø*6Ø6Ø6Ø4
    3434143414343          :REM*212
222 DATA 414343414343414341 41*4
    343414343414343414 3*4143436
    Ø6ØØ8Ø9Ø7Ø86Ø          :REM*155
223 DATA 6Ø6Ø6Ø6Ø4141414143 43*4
    141414143434163Ø6Ø41*4343414
    1414143434141          :REM*215
224 DATA 41416Ø6Ø6Ø13Ø3ØF12Ø5*6
    Ø6Ø6Ø43434143414343*4143434
    1434341434341          :REM*43
225 DATA 434341434341434341 43*4
    143436Ø416Ø416Ø4143*4143434
    1434163Ø41Ø41          :REM*1Ø1
226 DATA 6Ø4163Ø4343143636Ø6Ø*3
    36Ø6Ø6Ø6Ø6Ø6Ø434143*4143434
    3434343434143          :REM*45
227 DATA 414343414341434343 43*4
    343434143414361Ø6Ø6Ø*6Ø6Ø6Ø6
    Ø6Ø6Ø6Ø43416Ø          :REM*124
228 DATA 416Ø416Ø416Ø416Ø416Ø*4
    16Ø416Ø416Ø416Ø416Ø*416Ø416
    Ø416Ø436Ø6Ø6Ø          :REM*147
229 DATA 6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø434343*4
    343434343434343434 3*4343434
    3434343434343          :REM*1Ø8
23Ø DATA 434343434343436Ø6Ø6Ø*6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*6Ø6Ø6Ø6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø           :REM*16
231 DATA 6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*6Ø6Ø6Ø6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø           :REM*164
232 DATA 6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*6Ø6Ø6Ø6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø           :REM*165
233 DATA 6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø6Ø*6Ø6Ø6Ø6
    Ø6Ø6Ø6Ø6Ø6Ø6Ø           :REM*166
234 DATA -1                 :REM*88
```

■

NEW! ACTION REPLAY v5.0

THE ULTIMATE UTILITY / BACKUP CARTRIDGE FOR THE C64/128

• Action Replay allows you to Freeze the action of any Memory Resident Program and make a complete back-up to disk - and that's not all ... Just compare these features

SUPER CRUNCHER — ONLY $9.99

- A utility to turn your Action Replay 5 into a super powerful program compactor. Reduce programs by up to 50%! Further compact programs already cruched by AR5's compactor

GRAPHICS SUPPORT DISK — ONLY $19.99

To take advantage of AR5's unique power, we have prepared a suite of graphic support facilities.

- SCREEN VIEWER: View screens in a 'slide show' sequence.
- MESSAGE MAKER: Add scrolling messages to your saved screens with music.
- PROSPRITE: A full sprite editor.
- ZOOM LENS: Explode sections of any saved screen to full size.

WARP 25

The world's fastest disk serial Turbo. A typical backup will reload in under 5 seconds.

- No special formats — with action replay you simply save directly into Warp 25 status.
- Backup all your existing programs to load at unbelievable speed!
- Warp Save/Load Available straight from Basic.

RAMLOADER

- You can also load load most of your commercial originals 25 times faster! With our special LSI logic processor and 8K of onboard Ram, Action Replay offers the world's fastest Disk Serial Turbo.

UNIQUE CODE CRACKER MONITOR

- Freeze any program and enter a full machine code monitor.
- Full Monitor Features.
- Because of Action Replay's on Board Ram the program can be looked at in its ENTIRETY. That means you see the code in its Frozen state not in a Reset state as with competitors products.

MORE UNIQUE FEATURES

- Simple Operation: Just press the button at any point and make a complete back-up of any* memory-resident program to tape or disk.
- Turbo Reload: All back-ups reload completely independent of the cartridge at Turbo speed.
- Sprite Monitor: View the Sprite set from the frozen program — save the Sprite — transfer the Sprite from one game to another. Wipe out Sprites, view the animation on screen. Create custom programs.
- Sprite Killer: Effective on most programs — make yourself invincible. Disable Sprite/Sprite/Background collisions.
- Unique Picture Save: Freeze and save any Hires Screen to tape or disk. Saved in Koala, Blazing paddles format.
- Compactor: Efficient compacting techniques — 3 programs per disk — 6 if you use both sides.
- Single File: All programs saved as a single file for maximum compatibility.
- Utility Commands: Many additional commands: Autonum, Append, Old, Delete, Linesaver, etc.
- Screen Dump: Print out any screen in 16 Gray Scales, Double size print options.
- Unstoppable Reset: Reset button to Retrieve System and Reset even so called Unstoppable Programs.
- Fully Compatible: Works with 1541/C/II, 1581, 1571 and with C64, 128, or 128D (in 64 Mode).
- Disk Utilities: Fast Format, Directory, List, Run and many other key commands are operated by Function Keys.
- Unique Restart: Remember all of these utilities are available at one time from an intergrated operating system. A running program can be Frozen to enter any Utility and the program is restarted at the touch of a key — without corruption.
- LSI Logic Processor: This is where Action Replay V gets its power. A special custom LSI chip designed to process the logic necessary for this unmatched Freeze/Restart power. No other cartridge has this power!

UPGRADE ROM — ONLY $16.99

- Give your AR IV all the power of the new V5.0.

RIO COMPUTERS

800-782-9110 ORDERS ONLY

MON-SAT 8 AM-6 PM PACIFIC TIME

YOUR HIGH TECH SOURCE FOR COMMODORE ACCESSORIES

CUST SERVICE TECH SUPPORT **702-454-7700** TU-SA 10AM-6PM FAX: 702-454-7700

DEEP SCAN BURST NIBBLER - $39.99 COMPLETE

THE MOST POWERFULL DISK NIBBLER AVAILABLE ANYWHERE AT ANY PRICE!

-Burst Nibbler is actually a two part system - a software package and a parallel cable to connect a 1541 or 1571 to a C-64 or C-128

-What gives Burst Nibbler its power? Conventional nibblers have to decode the data from the disk before it can transfer it using the serial port bus - when non-standard data are encountered they are beat. Burst Nibbler transfers data as raw GCR code via the parallel cable without the need to decode it, so you get a perfect copy of the original.

-Will nibble up to 41 tracks -Copy a whole disk in under 2 min -Installs in minutes - no soldering required on 1541 (1571 requires soldering)

SOFTWARE ALONE - ONLY $19.99 -- CABLE ALONE - ONLY $19.99

MIDI 64 -Only $49.99

- Full specification MIDI at a realistic price
- MIDI In - MIDI Out - MIDI Thru
- Compatible with Digital Sound Sampler and Advanced Music System

MIDI CABLES (5 ft. prof. quality) -Only $*8.99

DIGITAL SOUND SAMPLER

- Record any sound digitally into memory and then replay it with astounding effects
- Playback forwards/backwards with echo/reverb/ring modulation
- Full sound editing and realtime effects menu with waveforms
- Powerful sequencer with load & save
- Line In - Mic In - Line Out and feedback controls

Only - $89.95

ADV. MUSIC SYSTEM

Powerful modular program for creating, editing, playing and printing out music

- Easy input and storage of music
- Playback through the C-64 internal sound or external MIDI keyboard/synthesizer
- Print music in proper musical notation together with lyrics using **PRINTER** module
- Enter music a note at a time in written music format using the **EDITOR** or via on screen piano **KEYBOARD** emulator or via an externally connected **MIDI** keyboard
- Use the **LINKER** to connect music files together to form very large compositionsd
- Generate almost unlimited sounds with the flexible **SYNTHESIZER** module

Only - $29.99

THE ADVANCED OCP ART STUDIO

COMPREHENSIVE, USER FRIENDLY ART AND DESIGN SOFTWARE

- Windows - icons - pull down menus - pointing devices
- Operates in Hi-Res mode. Full control over color attributes
- All info on screen - no need to switch between picture & menu
- Compatible with keyboard, joystick, mouse and Koala Pad
- Supports Epson compatibles plus user defined printer drivers
- 16 pens, 8 random sprays, 16 user definable brushes
- Windows can be inverted, cut & pasted, enlarged, reduced, squashed, stretched, flipped and rotated
- Solid & textured fill option, with 32 user definable patterns
- 3 levels of magnification with pan & zoom, pixel clear and plot
- Text - 9 character sizes, 2 directions, bold and rotate
- Comprehensive font editor
- Lines, points, rectangles, triangles, circles and rays
- Undo facility for last operation

Only - $29.99

RIO Computers
3430 E. TROPICANA AVE. #65
LAS VEGAS, NV 89121

*Add $5.00 shipping/handling in the continental U.S.: $8.00 - PR, AK, HI, FPO, APO: $11.00-Canada/Mex: C.O.D. orders add $3.50 to above charges: SPECIFIY COMPUTER MODEL WITH ORDER: VISA/MC/Checks/Money Orders/C.O.D. Accepted: Please call for return authorization number - returns subject to a 20% restocking fee: We reserve the right to substitute products of different appearance but equal quality and function for items pictured above: Prices subject to change without notice.

800-782-9110
702-454-7700
IN NEVADA

RIO COMPUTERS

800-782-9110 *ORDERS ONLY MON-SAT 8AM-6PM PACIFIC TIME

YOUR HIGH TECH SOURCE FOR C-64 PRODUCTS

CUST SERVICE
TECH SUPPORT
702-454-7700
TU-SA 10AM-6PM
FAX: 702-454-7700

SCAN THE FUTURE OF DESKTOP PUBLISHING WITH THE 64

HANDYSCANNER 64

The Worlds First Handscanner for the 64!

- Professional quality super high 400 dots per inch resolution
- Reads the graphics from any printed document
- Converts any material to digitized graphics in seconds
- Elaborate grey-tone scale digitizes color or black & white photos using 3 built in dithering settings
- B/W setting for crisp reprodution of high contrast line art
- Enlargement or reduction from 33% to 300%
- Graphic memory of 640 X 400 standard (640 X 800 with Pagefox module)
- Included software has all the standard functions of a good drawing program

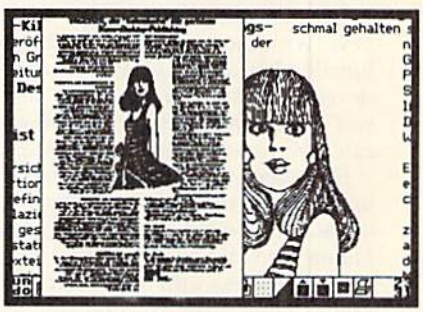
ONLY $299.95

PAGEFOX

3 Easy To Use Editors For Perfect Home Desktop Publishing

ONLY $139.95

- Completely menu driven
- 100Kb storage enlargement module keeps entire page in memory
- Uses proportional mouse or joystick for total control over text, graphics or picture placement

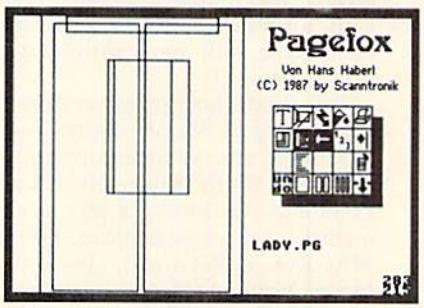


GRAPHIC EDITOR

- Store 640 X 800 points (equal to one 8.5 X 11 inch page)
- Draw lines, rectangles, circles, and ellipses with rubberband cursor
- Pattern funtion generator with 20 patterns
- Move, copy, reflect, revolve, & connect with exact pixel positioning
- Zoom, fill, spray, freehand draw, undo and many more functions

TEXT EDITOR

- 12 character sets available at one time (more are reloadable) with 9 variations (outline, shadow, bold, etc.) give thousands of combinations
- Proportional spacing, left/right justify, indentation, underline, sub- and super-script, pixelwise character adjust and much much more
- NLQ print on Epson compatibles (MPS 801, 802 &803 supported)



LAYOUT EDITOR

- Display full page or any 320 X 200 block
- Text flows around graphics and from frame to frame in any order
- Only 5 seconds to reformat and display an entire page
- Left/right format, center or right justify, automatic formatting, etc.

CHARACTERFOX ~ ONLY $49.95
Create your own character sets or use the 25 built in sets. Also contains flourishes, frames, extra large initials and utilities.

M3 PROPORTIONAL MOUSE ~ ONLY $39.95

190 CHARACTER SET DISK ~ ONLY $24.95
2 double sided disks provide a selection of fonts for any requirement.

GRAPHICS LIBRARY 1 ~ ONLY $24.95
Over 200 images on 3 disks

GRAPHICS LIBRARY 2 ~ ONLY $24.95

RIO COMPUTERS
3430 E. TROPICANA AVE. #65
LAS VEGAS, NV 89121

*Add $5.00 shipping/handling in the continental U.S.: $8.00 - PR, AK, HI, FPO, APO: $11.00-Canada/Mex: C.O.D. orders add $3.50 to above charges: SPECIFIY COMPUTER MODEL WITH ORDER: VISA/MC/Checks/Money Orders/C.O.D. Accepted: Please call for return authorization number - returns subject to a 20% restocking fee: We reserve the right to substitute products of different appearance but equal quality and function for items pictured above: Prices subject to change without notice.

800-782-9110
702-454-7700
IN NEVADA

Macro Mania

Add these macros to your 64, and you'll have Basic commands and functions in a single keystroke.

By STEPHEN DIRSCHAUER

Macro Mania is a short utility that's handy for any C-64 user. Why? Well, even in this age of point-and-click interfaces, typing is still a major part of interacting with a computer, and Macro Mania can save you countless keystrokes. How? By defining 45 macro keys that can be added to your C-64. Each key prints its own macro of up to ten characters.

Macro keys aren't new to the C-64. You can find them in any of the many utilities that let you program your C-64's normally functionless function keys. With the utility in place, hitting a function key automatically prints a Basic command or some other text. If you've used them before, you know they can save you a great deal of time.

However, they aren't perfect. My main gripe is that you're limited to four, or, at most, eight macro keys. Macro Mania provides 45. The other utilities are also useless with a number of programs that use the function keys themselves. Macro Mania doesn't meddle with unshifted function keys, so it's compatible with most programs that utilize them.

Type in the boot program from Listing 1, using *RUN*'s Checksum program to look for any typing errors, and save it to disk. Do the same with Listing 2. Load and run Listing 2 *once* to create on disk the machine language file called MACRO MANIA.ML. To activate Macro Mania, load and run Listing 1. Entering SYS 49699 turns Macro Mania on and off.

Using Macro Mania

You access any of Macro Mania's macros by holding down the Commodore key and a shift key and hitting the appropriate macro key. This may sound like an acrobatic maneuver, but it's really quite simple and quick. Each key will print its own macro only if the Commodore and shift keys are held down. Otherwise, it will act as it normally would.

Although you can program your own macros (I'll show how below), Macro Mania comes with a built-in set, listed in Table 1 along with their corresponding keys. Italics in the table indicate nonprintable characters, listed in a format similar to *RUN*'s program listings. For instance, *5 CRSR DNs* is five presses of the cursor-down key.

Defining Macros

You can define any of the 45 macro keys like this:

```
SYS 50000,"key","macro"
```

For example, to set the P macro to poke, you'd enter:

```
SYS 50000,"P","POKE"
```

Macro Mania doesn't limit you to literal strings like Poke. Any string expression will do, as in these three examples:

```
SYS 50000,A$,"APPLE"
SYS 50000,"K",JT$(5)
SYS 50000,P$,RIGHT$(I$,5)
```

To add the return key to a macro, just add CHR$(13) to its definition. For example:

```
SYS 50000,"L","LIST"+CHR$(13)
```

The L macro would then automatically list the program in memory. You can also put macro definitions in programs.

If you'd like to view a macro's contents, omit the second parameter:

```
SYS 50000,"A"
```

Clear a macro by setting it to a null string:

```
SYS 50000,"C",""
```

Compatibility and More

As a general rule, Macro Mania will work with any program that doesn't disturb memory from 49699 to 50919 ($C223–$C6E7) or change the keyboard vector at 655 ($028F). That in- ►

RUN it right: **C-64**

ILLUSTRATED BY ANN DILLON

RUN W·O·R·K·S

Full 64 and 128 Mode Support!

Productivity Software with a Creative Advantage

RUN Works, a new dimension to productivity software, giving you top quality programs at an economical price! Best of all, **RUN Works is fully C-64 and C-128 compatible!**

Money Manager. Have you ever wondered where your money goes each month? Then Money Manager is for you! This personal budget and record-keeping system will allow you to keep track of your income and expenses. . . so you can stay within your budget!

RUN Term. Nearly half of all Commodore users own modems. *RUN*'s user friendly RUN Term reveals the exciting world of BBSs, on-line networks and information exchanges. With advanced features like 300/1200 Baud support, autodialing, ASCII capture of text, XModem and Punter protocols and much more.

Label Base. Most people need to produce address labels in large quantities from time-to-time, and using your Commodore and printer makes the job quick and efficient. Label Base makes this time-consuming chore a snap.

Form Writer. This program lets you design and print letters, invoices, surveys, or any other kind of form for your small business or home application. Great for school projects too!

RUN Paint. This full-featured paint and draw program has more drawing options and tools than most commercial packages, plus it offers compatibility with the popular Doodle! and Koala graphic formats. Professionals and amateurs alike will find this a fantastic tool for computer art.

RUN PAINT

RUN Shell. This powerful disk utility lets 1541, 1571 and 1581 users access, maintain and manipulate files with ease. It's a menu-driven disk manager that makes erasing, renaming or copying files or disks as easy as the press of a key. Plus a whole lot more!

Graphmaker. A graph-lover's delight! Generate beautiful charts and graphs of your custom data sets for analysis and impressive presentation.

Satisfaction Guarantee: Use **RUN Works** for a full 30 days. If it doesn't satisfy your productivity needs, simply return the disk and fully illustrated documentation book for a complete refund!

To order, mail this coupon or call 1-800-343-0728

Yes! Send me **RUN Works** right away!

☐ $24.97 enclosed.

☐ Charge my: ☐ American Express ☐ MasterCard ☐ Visa ☐ Discover

Card # _____ Exp. Date _____

Signature _____

Name _____

Address _____

City, State, Zip _____

Foreign Airmail, please add $3.95 per disk.

RW1190

RUN Works
IDG Communications/Peterborough
80 Elm St.
Peterborough, NH 03458
or call 1-800-343-0728

cludes most Basic, and even many machine language, programs. I've used Macro Mania with games, utilities and two machine language word processors. However, the only way to find out if it'll work with a specific program is to experiment.

When you turn Macro Mania on and off with SYS 49699, the current macro set won't be harmed.

Finally, Macro Mania disables the Commodore/shift combination's usual function: toggling between the C-64's two character sets. With Macro Mania in place, you can hold down Commodore and shift and hit the delete key to get the same effect. R

Stephen Dirschauer, an enthusiastic telecommunicator and programmer, enjoys using his C-128 in 64 and 128 modes.

Table 1. Default macro set.

Key	Macro	Key	Macro	Key	Macro
A	AND	P	PRINT	2	LOAD "$",
B	OR	Q	SYS 49749	3	OPEN 4,4 *return*
C	CHR$(	R	RETURN	4	CMD 4 *return*
D	DATA	S	STOP	5	CLOSE 4 *return*
E	CLOSE	T	TO	6	LOAD "*",8:
F	FOR	U	THEN	7	LOAD "$",8:
G	GOTO	V	VERIFY	8	*CRSR RT, DEL*
H	GOSUB	W	WAIT	9	*5 DELs*
I	INPUT	X	RUN	0	LIST: *return*
J	INPUT#	Y	RESTORE	F1	*5 CRSR UPs*
K	READ	Z	GET#	F3	*5 CRSR LFs*
L	LOAD	↑	SYS 50000,"	F5	*5 CRSR RTs*
M	MID$(	@	*undefined*	F7	*5 CRSR DNs*
N	NEXT	*	*undefined*	cursor-down	*undefined*
O	OPEN	1	LOAD "*",	cursor-right	*undefined*

Listing 1. Boot program. (Available on ReRUN disk. See order card facing page 48.)

```
10 REM MACRO MANIA 64 BOOT PROG
   RAM                    :REM*239
20 IF A=0 THEN A=1:LOAD"MACRO M
   ANIA.ML",8,1           :REM*3
30 SYS 49699              :REM*31
```

Listing 2. Macro Mania program. (Available on ReRUN disk. See order card facing page 48.)

```
0 REM LISTING 1 CREATES (AND SH
  OULD NOT BE CALLED) MACRO MAN
  IA.ML                   :REM*177
5 OPEN 8,8,8,"MACRO MANIA.ML,P,
  W"                      :REM*170
6 CT=0:PRINT"{SHFT CLR}":REM*56
10 READ A$:IF A$="-1" THEN CLOS
   E8:PRINT:PRINT"ALL DONE!":EN
   D                      :REM*129
12 PRINT"{HOME}READING LINE "+S
   TR$(CT):CT=CT+1        :REM*141
15 IF LEN(A$)<62 THEN 55
                          :REM*254
20 B$=MID$(A$,1,20)+MID$(A$,22,
   20)+MID$(A$,43,20)     :REM*242
25 FOR I=1 TO 30          :REM*181
30 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                          :REM*209
35 H=ASC(H$)-48+7*(H$>"9")
                          :REM*98
40 L=ASC(L$)-48+7*(L$>"9")
                          :REM*197
45 BY=H*16+L:PRINT#8,CHR$(BY);
                          :REM*67
50 NEXT:GOTO 10           :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
   O 70                   :REM*184
60 IF LEN(A$)<42 THEN B$=LEFT$(
   A$,20)+RIGHT$(A$,(LEN(A$)-21
   )):GOTO 70             :REM*176
65 B$=LEFT$(A$,20)+MID$(A$,22,2
   0)+RIGHT$(A$,LEN(A$)-42)
                          :REM*140
70 FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                          :REM*140
80 H=ASC(H$)-48+7*(H$>"9")
                          :REM*17
85 L=ASC(L$)-48+7*(L$>"9")
                          :REM*232
90 BY=H*16+L:PRINT#8,CHR$(BY);
                          :REM*148
95 NEXT:GOTO 10           :REM*160
100 REM MACHINE LANGUAGE FOR BI
    GMAC 64               :REM*104
101 DATA 23C2AD64C2D023AE8F02*A
    C900028E900C28C91C2A2*92A0C28
    E8F028C9002A9         :REM*103
102 DATA 808D64C2A965A0C2201E*A
    B60AE900C2AC91C28E8F*028C900
    2A97BA0C2201E         :REM*104
103 DATA ABA9008D64C26000D42*4
    9474D41432036342041*4354495
    6415445442E00         :REM*202
104 DATA 0D4249474D41432036342*2
    044495341424C45442E*000000A
    9808D9102AD8D         :REM*220
105 DATA 02C903F008A9408D22C3*4
    C48EBA5CBC93FD004A9*0D85CBC
    900D011AD22C3         :REM*161
106 DATA C900F00AAD18D049028D*1
    8DA900A200DD23C3F0*0BE8E02
    DD0F68D22C34C         :REM*88
107 DATA 48EBCD22C3D0034C48EB*A
    924A0C58D05C38C06C3*E000F01
    518AD05C3690A         :REM*251
108 DATA 8D05C3AD06C36900D8D06*C
    3CA4CE9C2A200BDFFFF*F00B9D7
    702E8E00AF003         :REM*161
109 DATA 4C04C386C6A5CB8D22C3*A
    9485CB4CE0EA000A1C*1412E0E1
    51A1D2122252A         :REM*201
110 DATA 242726293E110D161E1F*0
    91719C23383B080B10*13181B2
    02E3136040506         :REM*161
111 DATA 0307022FDAE209EAD20*A
    3B6D001608E63C38C64*C3ADFFF
    F8DE6C6C92AD0         :REM*160
112 DATA 05A9254CE3C3C95ED005*A
    9264CE3C3C94D005A9*244CE3C
    3C911D005A92B         :REM*1
113 DATA 4CE3C3C91DD005A92C4C*E
```

```
    3C3C9859ØØDC9899ØØ3*4CAEC33
    8E95E4CE3C3C9          :REM*1
114 DATA 4Ø9Ø28C95B9Ø1EA9BFAØ*C
    32Ø1EAB2Ø73ØØ2Ø9EAD*2ØA3B66
    ØØD4E4F542Ø41          :REM*95
115 DATA 2Ø4D4143524FØØ38E941*4
    CE3C3C93ØBØØ34CAEC3*C93A9ØØ
    34CAEC338E916          :REM*97
116 DATA A2ØØAAA924AØC58D69C4*8
    C6AC4EØØØFØ1518AD69*C469ØA8
    D69C4AD6AC469          :REM*57
117 DATA Ø8D6AC4CA4CFØC32Ø79*Ø
    ØC9ØØDØ23AE69C48E1D*C4AC6AC
    48C1EC4ADFFFF          :REM*2Ø7
118 DATA DØØ34C4FC4AE1DC4AC1E*C
    48E66C48C67C44C84C4*2ØFDAE2
    Ø9EAD2ØA3B6DØ          :REM*2Ø5
119 DATA 1CAE69C4AC6AC48E4DC4*8
    C4EC4A9ØØ8DFFFF2ØB2*C4A91CA
    ØC52Ø1EAB6Ø8E          :REM*17Ø
12Ø DATA 66C48C67C48D1BC5A2ØØ*B
    DFFFF9DFFFFFØØ6E8EC*1BC5DØF
    2AD69C48D82C4          :REM*172
121 DATA AD6AC48D83C4A9ØØ9DFF*F
    F2ØB2C4A9222ØD2FFA2*ØØAD66C
    48D9BC4AD67C4          :REM*168
122 DATA 8D9CC4BDFFFFFØØD2ØD2*F
    FE8EØØAFØØ5EC1BC5DØ*EEA9222
    ØD2FF6ØA9ØD2Ø          :REM*165
123 DATA D2FFADE6C6C911FØ34C9*1
    DFØ3AC985BØØ62ØD2FF*4CDEC4A
    9462ØD2FF38AD          :REM*92
124 DATA E6C6E985AABDEEC42ØD2*F
    FA92Ø2ØD2FFA93D2ØD2*FFA92Ø2
    ØD2FF6Ø313335          :REM*82
125 DATA 37A9Ø6AØC52Ø1EAB4CDE*C
    4A91ØAØC52Ø1EAB4CDE*C443525
    3522Ø444F574E          :REM*164
126 DATA ØØ435253522Ø52494748*5
    4ØØØ28454D5Ø545929*ØØ414E4
    4ØØØØØØØØØØØ          :REM*39
127 DATA ØØ4F52ØØØØØØØØØØØØØ*Ø
    Ø4348522428ØØØØØØØØ*ØØ44415
    441ØØØØØØØØØ          :REM*133
128 DATA ØØ434C4F5345ØØØØØØØ*Ø
    Ø464F52ØØØØØØØØØØØ*ØØ474F5
    44FØØØØØØØØØ          :REM*225
129 DATA ØØ474F535542ØØØØØØØ*Ø
    Ø494E5Ø5554ØØØØØØØ*ØØ494E5
    Ø555423ØØØØØ          :REM*215
13Ø DATA ØØ52454144ØØØØØØØØØ*Ø
    Ø4C4F41442ØØØØØØØØ*ØØ4D494
    42428ØØØØØØØ          :REM*96
131 DATA ØØ4E455854ØØØØØØØØØ*Ø
    Ø4F5Ø454EØØØØØØØØØ*ØØ5Ø524
    94E54ØØØØØØØ          :REM*112
132 DATA ØØ5359532Ø3439373439*Ø
    Ø52455455524EØØØØØØ*ØØ53544
    F5ØØØØØØØØØØ          :REM*112
133 DATA ØØ544FØØØØØØØØØØØØ*Ø
    Ø5448454EØØØØØØØØØ*ØØ56455
    249465ØØØØØ          :REM*13
134 DATA ØØ5741495ØØØØØØØØØ*Ø
    Ø52554EØØØØØØØØØØ*ØØ52455
    3544F5245ØØØØ          :REM*59
135 DATA ØØ4745542ØØØØØØØØØ*Ø
    Ø4C4953543AØDØØØØØØ*ØØ4C4F4
    144222A222CØØ          :REM*162
136 DATA ØØ4C4F4144222422 2CØØ*Ø
    Ø4F5Ø454E2Ø342C34ØD*ØØ434D4
    42Ø34ØDØØØØØ          :REM*143
137 DATA ØØ434C4F53452Ø34ØDØØ*Ø
    Ø4C4F4144222A222C38*3A4C4F4
    1442224222C38          :REM*192
138 DATA 3A1D14ØØØØØØØØØØØØ*Ø
    Ø141414141 4ØØØØØØØ*ØØØØØØ
    ØØØØØØØØØØ          :REM*126
139 DATA ØØØØØØØØØØØØØØØØØØ*Ø
    Ø53595335 3Ø3Ø3Ø2C*2291919
    19191ØØØØØØ          :REM*164
14Ø DATA ØØ9D9D9D9D9DØØØØØØØ*Ø
    Ø1D1D1D1D1DØØØØØØØ*ØØ11111
    11111ØØØØØØ          :REM*11
141 DATA -1               :REM*252 ■
```


BIG BLUE READER

Reads & Writes IBM MS-DOS Disks

Big Blue Reader transfers word processing, text, ASCII, and binary files between Commodore and IBM MS-DOS diskettes. *1571 or 1581 Disk Drive is required. Does not work with 1541.*
Fast, easy to use, menu driven program for novices and experts. Transfers MS-DOS files on 360K 5.25" & 720K 3.5" disks.
Big Blue Reader 128 V3.1 supports: C128 CP/M files, 17xx REU, 40/80 column, reading MS-DOS sub-directories, and much more.
Big Blue Reader 64 V2 available separately only **$29.95**
BBR 128 V3.1 upgrade available. Send original BBR disk and **$18**

BIG BLUE READER 128/64 only $44.95

BIBLE SEARCH V3.1

Fastest **Complete Bible on 7 Disks!**

A fast, easy-to-use tool for general **Bible study** and in-depth **Bible research**. Finds any word or verse in seconds! **Complete** Old and New Testament text and Concordance on **seven** 1541/71 **disks**. Includes C64 & C128 programs; printer and disk output; versatile search options; and more. Satisfaction, Money Back Guaranteed!
Please specify 1541, 1571 or 1581 disks.

Holiday Special $59.00 (KJV or NIV Whole Bible)

NEW, Bible Search Gospel Demo for C64/128 or Amiga only $3
"an enormously quick and responsive program", Gazette Aug '89
"try it with any drive-you'll be amazed", Twin Cities #25

SOGWAP Software – Ph:(219)724-3900
115 Bellmont Road; Decatur IN 46733
Order by check, money order, or COD. US Funds only.
Free shipping in US and Canada. No credit card orders.
Foreign orders add $5 ($12 for whole Bible).

• IMPORTANT NOTICE •

Our repairable power supply (for the C-64) may be the last power source you will ever purchase for your Commodore.

C= ™ — Finally — C= ™

A repairable C-64 power supply with outstanding features and benefits:

- 1 Year Warranty
- External fuse
- Schematic included
- Highest amperage output (1.8 amps)
- Does not operate "Hot"
- UL approved (VGE approved)
- Low cost — no one comes even close
- Sold worldwide in various overseas voltages
- European craftsmanship throughout
- Spare parts kit available
- Utilitizes large transformer
- Special prices for schools/dealers

Over 52% of C-64 failures were due to power supply malfunctions—save money in repairs and replace your power supply today.

Introductory price of **$24.95** plus UPS

• Catalog Announcement •

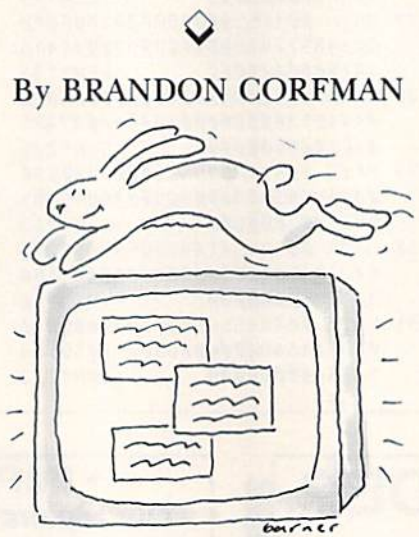
Call for your new free 27 page catalog of specialty items for Amiga, Commodore and IBM. The catalog contains: Low-cost replacement chips, parts, upgrades, 34 diagnostic products, tutorial VHS tapes, interfaces, complete power supply line and other worldwide products you won't find anywhere else. Dealers, use your letterhead.

THE GRAPEVINE GROUP, INC.
3 Chestnut St., Suffern, NY 10901
914-357-2424 • Fax 914-357-6243
Toll Free 1-800-292-7445

We Ship Worldwide Prices Subject to Change

Machine Language Magic

Now you don't have to hassle with machine code to make use of its speed in your programs.



By BRANDON CORFMAN

It happens to almost every programmer: You get a great idea for a new game or utility on your C-64, but when it comes to writing the code, Basic is just too slow to handle all the routines. You need the speed of machine language, but it takes too much time to learn. If only there were a utility that would supply the machine language for you!

Look no further. Text FX provides all the machine language copying, moving, scrolling and window routines, with resulting special effects, that you need in your Basic programs, leaving you free to develop that ultimate program without worrying about speed.

Text FX is designed to be invisible to Basic. Windows are stored under Basic and Kernal ROM, and the program itself takes no space from Basic RAM. Also, because Text FX uses SYS commands instead of keywords, the routines are as fast as possible.

Listing 1 contains a Basic program that writes the Text FX machine language to disk. Type it in, using *RUN*'s Checksum program to detect errors, save it under the name Text FX Data and run it.

Next, type in the program in Listing 2 and save it under the name Text FX Demo. This program gives you a short demonstration of the capabilities of Text FX, and, I hope, some ideas for using it in your own programs.

The starting memory address of Text FX is 49152 ($C000), and a jump table is located at the beginning of the program for convenience in accessing the routines. Text FX uses addresses $02, $00F8–$00FF, $0334–$033A, $A000–$BFFF and $E000–$FFFF for storage. The TextFill, MultiScroll, WindowSave, WindowRestore and InvertChar commands automatically calculate the current address of screen RAM and adjust their execution accordingly.

Note: At the beginning of a program with window commands, *always* reset the number of windows to zero with POKE 826,0.

WindowInit and WindowFade

WindowInit and WindowFade let you fade any character window to black, so it disappears into a black background. WindowInit, which must be activated first, sets up coordinates for the character window. WindowFade then does the actual step-by-step fading with a program loop. See Listing 3 for a sample routine that uses these commands.

Activate WindowInit with

```
SYS SA,X1,Y1,X2,Y2
```

where SA is the starting address of Text FX, X1 and Y1 are the X and Y coordinates of the top-left corner of the window, and X2 and Y2 are the bottom-right coordinates.

Activate WindowFade with

```
SYS SA+3
```

No parameters are needed here, but a loop is required to make the screen fade in steps. I designed WindowFade with a loop, so you can regulate the speed of the fade. Simply insert a delay between the SYS statement and the If statement in line number 40 of Listing 3.

When the screen is completely black, WindowFade tells your program by storing 1 in address 2. The loop will be broken, and your program will go on to the next line.

FadeInit and FadeScreen

This pair of commands fades the entire screen, including the background and border, to black. FadeInit must be activated before FadeScreen for your program to work correctly.

Activate FadeInit with

```
SYS SA+6
```

No parameters are needed, since FadeInit involves the entire screen, not just a window.

Activate FadeScreen with

```
SYS SA+9
```

No parameters are needed here, either, but a loop similar to the one in WindowFade is required. Here again, you can put a delay in the loop if needed. FadeScreen operates much like WindowFade, except for affecting the entire screen.

ColorFill and TextFill

As the name implies, ColorFill fills any portion of color RAM with the color you specify. It's much faster—and more versatile—than using Pokes from Basic. ColorFill should be activated prior to TextFill, especially on old C-64s where Pokes to screen RAM are invisible. A sample routine that uses these commands appears in Listing 4.

Activate ColorFill with

```
SYS SA+12,X1,Y1,X2,Y2,COLOR
```

where X1, Y1, X2 and Y2 are the window coordinates, and COLOR is the ►

RUN it right: **C-64**

ILLUSTRATED BY DAVID GARNER

GEOBASIC IS HERE AT LAST!

Now you can bring point-and-click performance to all your programs. Write your own utilities, games and more. Create your own checkbook register or appointment book. Compose music; create color charts; build a recipe file; index your collectibles or experiment with quilt designs. Even beginners can become accomplished programmers with these advanced Basic commands that make programming rewarding, interesting and fun.

More than 100 Commands!

GeoBasic is the long awaited high level programming language from Berkeley Softworks for the C64/C128 GEOS user. Now, with GeoBasic's 100+ commands, all your programs can have the fun and excitement, the professional look and feel of pulldown menus, icons, dialog boxes and more.

only $39.95

Includes Graphics, Fonts and More!

Commands for drawing graphic images, using fonts, moving sprites making sound and more. Printing text or bitmap graphics on your printer has never been easier. Read and write data to disk files using powerful disk commands. GeoBasic even has support for structured programming. And that's not all . . .

Advanced Programming Features Include:

- Line Labels
- Longer Variable Names
- Definable Print Windows
- WHILE . . . LOOP
- REPEAT . . . UNTIL
- Process Routines
- CALL command for user written ML routines

5 Specialized Editors

The GeoBasic Package includes 5 specialized editors that make programming easier than you've ever dreamed. A ***Menu Editor*** lets you design the exact pulldown menu you need. The ***Bitmap Editor*** makes it a snap to include bitmap graphics within a program.

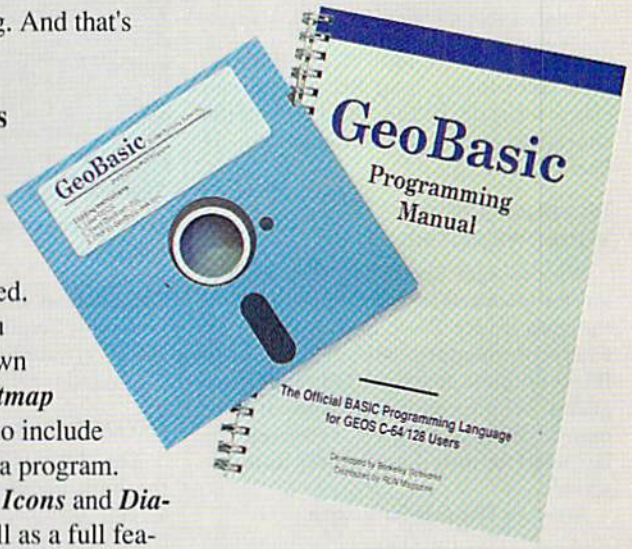
There are editors for ***Icons*** and ***Dialog boxes*** as well as a full featured ***Sprite Editor***. And all these are readily accessible from the built-in ***Text Editor***. Best of all — each uses the GEOS point-and-click interface you already know how to use! In addition, GeoBasic comes complete with ***sample applications*** that show you what you can do with this versatile programming language!

Rich with Features!

- Over 100 commands!
- Works under GEOS
- Point and Click Interface
- Specialized Utility Editors
- GEOS Mouse, Menu, Dialog Box & Icon support
- Graphic commands
- Sprite commands
- Sound commands
- Printer commands
- Disk commands
- Sample Applications

Available only from RUN!

Developed by the GEOS pros at Berkeley Softworks, GeoBasic is not sold in stores. It's available only through RUN magazine, so don't delay.Take advantage of this super GEOS offer now!



Complete the coupon below, or for immediate service, CALL TOLL FREE:

1-800-343-0728

and CHARGE IT to your credit card. Not available in retail stores.

❑ **YES!** Send me GeoBasic (disk plus complete manual) for only $39.95 postpaid.

- ❑ Payment enclosed
- ❑ CHARGE IT to my:

❑ MasterCard ❑ VISA ❑ Amex
❑ Discover

Card # Exp.

Signature

Name

Address

City State Zip

Canadian and foreign orders add $4.50 per program. US funds drawn on US bank. All programs require GEOS. GeoBasic runs in 64 mode (40 column) on C64/C128. Allow 4-6 weeks for delivery. **GB1190**

GEOS Products • RUN Magazine
P O Box 802 • Peterborough, NH 03458

GeoBasic

number, 0–15, of the Commodore color to put in color RAM.

TextFill has two main purposes: to clear portions of the screen used for windows and to provide borders for windows. Activate it with

SYS SA+15,X1,Y1,X2,Y2,SC

where X1, Y1, X2 and Y2 are the window coordinates, and SC is a screen character code, 0–255. You can find the character codes in the *Commodore 64 User's Guide*.

WindowSave and WindowRestore

WindowSave saves any portion of the screen (characters and their colors) to the area under Basic or Kernal ROM, where no memory can be stolen from Basic or most machine language programs. WindowSave's companion command, WindowRestore, retrieves the last window stored and places it on the screen.

Activate WindowSave with

SYS SA+18,X1,Y1,X2,Y2

where X1, Y1, X2 and Y2 are the window coordinates. Up to eight windows can be active at once.

Activate WindowRestore with

SYS SA+21

This command needs no parameters.

ScrollInit and MultiScroll

These commands are used together to scroll all or part of the screen in any direction. ScrollInit is the set-up routine, while MultiScroll does the actual scrolling.

Activate ScrollInit with

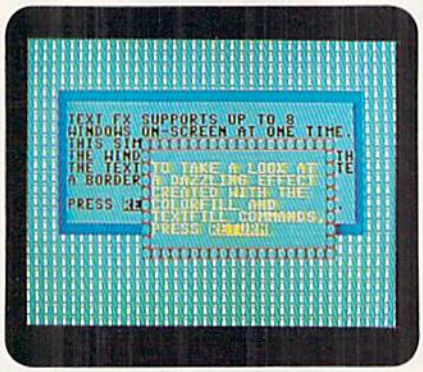
SYS SA+24,D,B1,B2

where D is the direction you want the screen to move, and B1 and B2 are the X or Y boundaries of the area that moves. The possible direction values are 1 for up, 2 for right, 3 for down and 4 for left. When scrolling up or down, B1 and B2 are X coordinates in the range 0–39; when scrolling right or left, B1 and B2 are Y coordinates in the range 0–24.

Activate MultiScroll with

SYS SA+27

This command needs no parameters.



Text FX lets you create fantastic screen effects.

Once you've set a direction and boundaries with ScrollInit, you can use MultiScroll repeatedly until another Text FX command is executed.

InvertChar

The InvertChar command toggles the high bit of screen memory in the screen window you specify, inverting the video in the window. This is especially handy for highlighting menu options and flashing part of the screen. Activate InvertChar with

SYS SA+30,X1,Y1,X2,Y2

where X1, Y1, X2 and Y2 are the window coordinates.

MemFill

MemFill is a general-purpose command for clearing a hi-res screen or erasing a section of memory. Activate MemFill with

SYS SA+33,ADDRESS 1,ADDRESS 2,VALUE

where ADDRESS 1 and ADDRESS 2 are the beginning and ending addresses for the fill operation, and VALUE is the number of the character to insert.

MemCopy

Copying memory at machine language speed is easy with MemCopy. Try using this command to copy character sets or hi-res screens, or, with MultiScroll, to scroll screens for an arcade game. Activate MemCopy with

SYS SA+36,ADDRESS 1,ADDRESS 2,DESTINATION START

where ADDRESS 1 and ADDRESS 2 are the beginning and ending addresses of the memory area you're copying from, and DESTINATION START is the beginning address of the memory area you're copying to.

Designer's Notes

I certainly liked the effect of the fade routines when I wrote them, but after a while, I began to wish for fade-ins, too. At first, I thought the mechanics of doing a fade-in would be beyond my ability and patience, but when I started thinking about how to use the window routines in programs, it came to me. While the screen is blanked, you can save each step of a fade-out as a window, then flip the screen back on and resurrect the text in a few easy steps. And, this takes only a few seconds! To turn off the screen, use POKE 53265, PEEK (53265) AND 239; to turn it back on, use POKE 53265, PEEK (53265) OR 16.

Text FX doesn't provide for restoring windows in a different order and at different locations, but it can be done—at your own risk and with your own error checking. Here's how:

Address 826 ($033A) is used by Text FX to hold the number of the window currently open. This number increases or decreases accordingly each time a window is opened or closed. To change the window order, change the value in this address to the number of the window you want.

The X and Y values specified in each WindowSave command are stored as the first four bytes of the window's data with the starting memory addresses of the eight windows at $A000, $A800, $B000, $B800, $E000, $E800, $F000 and $F800. Changing these X and Y values changes the location on the screen where WindowRestore places the window. There's only one problem: WindowRestore doesn't check to see if the data it resurrects is off screen, so you could end up overwriting your Basic program.

Text FX will make a world of difference in your programming capability. Its ready-made machine language routines will free you to do the creative programming you want to do. R

Brandon Corfman enjoys designing utilities and has been programming on Commodore machines for six years.

Listing 1. Text FX Data program. (Available on ReRUN disk. See order card facing page 48.)

```
0 REM THIS LIST 1 CREATES (AND
  SHOULD NOT BE CALLED) TEXT FX
  .ML                    :REM*223
5 OPEN 8,8,8,"TEXT FX.ML,P,W"
                         :REM*156
6 CT=0:PRINT"{SHFT CLR}":REM*56
10 READ A$:IF A$="-1" THEN CLOS
   E8:PRINT:PRINT"ALL DONE!":EN
   D                     :REM*129
12 PRINT"{HOME}READING LINE "+S
   TR$(CT):CT=CT+1       :REM*141
15 IF LEN(A$)<62 THEN 55
```

IT'S VIDEO

IT'S AUDIO

IT'S COMPUTERS

Searching for a camcorder that will help you make terrific videos? ... Shopping for a quality CD player that won't bust your budget? ... Trying to create great graphics with your computer? ... Looking to upgrade your VCR system? ... It's all here in *ON!*

ON! explores emerging trends and exciting breakthroughs. You'll find out what's hot and what's not--the products you'll enjoy for years and those that are merely passing fads.

With each monthly issue you'll become a more savvy consumer. *ON!* gives you advice from the experts without confusing technical jargon.

And then, *ON!* helps you get the very best buys for your money.

But that's just the beginning. *ON!* is filled with important tips and helpful hints on how to get the most out of *all the home electronics equipment you already own.*

In *ON!* you'll discover...

- how ingenious camera techniques used by the pros can help you produce professional-quality videos.
- how easy it is to create a sound system that will satisfy even the most discerning music lovers and not take over your living room.
- how to take full advantage of your home computer – from preparing outstanding presentations to helping the kids with their homework.
- how to "build" a home theater and still have money left over for popcorn.
- and more!

Turn to *ON!* It's an experience you won't want to miss!

Order your FREE Premiere Issue of ON! today! Just call

1-800-343-0728

or fill in the coupon at right. This FREE offer is available for a limited time only.

The Premiere Issue of *ON!* will also go on sale at your newsstand November 13, 1990.

IT'S ON!

Order Your FREE Issue Today!

IT'S HOT

ON! is NEW. It's dynamic! ON! is the one magazine that puts you on the inside track of the fast-changing world of video, audio and home computers.

✓ ***YES!*** Send me my FREE Premiere Issue of ON! and reserve my Charter Subscriber privileges. If I like ON! my price for a full year (11 more issues for a total of 12) is just $12.97. That's a savings of 63% off the single copy price. If I choose not to subscribe, I'll write "cancel" on the bill you send, owe absolutely nothing, and keep the Premiere Issue with your compliments.

SEND NO MONEY NOW. WE WILL BILL YOU!

Name _____

Address _____

City _____ State _____ Zip _____

WIN A $5000 HOME THEATER!

For complete details on how you can win, order your FREE issue today.

YOUR SATISFACTION IS 100% GUARANTEED!

I understand that if I am not completely satisfied, I may cancel at any time and receive a full refund.

ON! P.O. Box 802, 80 Elm Street, Peterborough, N.H. 03458 • 1-603-924-9471 • 1-800-343-0728

RN11/90

```
                              :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,2Ø)         :REM*242
25 FOR I=1 TO 3Ø              :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                              :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55                  :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55                  :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                              :REM*67
5Ø NEXT:GOTO 1Ø               :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
   O 7Ø                       :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
   A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
   )):GOTO 7Ø                 :REM*176
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
   Ø)+RIGHT$(A$,LEN(A$)-42)
                              :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                              :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55                  :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55                  :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                              :REM*148
95 NEXT:GOTO 1Ø               :REM*16Ø
1ØØ REM HEX DATA FOR TEXT FX 64
                              :REM*2Ø1
1Ø1 DATA ØØC Ø4C27C Ø4C46C Ø4CFE*C
    Ø4CØ6C14C4FC14C92C1*4C2DC24
    C98C24C5AC34C             :REM*56
1Ø2 DATA 93C34C8ØC54CB4C54CFC*C
    52ØFECØ2ØC9C12ØFFC1*18AD35Ø
    36D34Ø385F88D             :REM*249
1Ø3 DATA 34Ø3A5F969D885F98D35*Ø
    36ØA2ØØAØØØ2Ø85CØC8*CC36Ø3F
    ØØ34C4ACØE8EC             :REM*115
1Ø4 DATA 37Ø3FØ1Ø18A5F8692885*F
    8A5F969ØØ85F94C48CØ*EE3BØ3A
    D3BØ3C9Ø4DØØ4             :REM*6
1Ø5 DATA A9Ø185Ø2AD34Ø385F8AD*3
    5Ø385F96ØB1F829ØFFØ*F9C9Ø1F
    Ø3DC9Ø2FØ3EC9             :REM*137
1Ø6 DATA Ø3FØ3FC9Ø4FØ59C9Ø5FØ*2
    8C9Ø6FØ24C9Ø7FØ34C9*Ø8FØ35C
    9Ø9FØ18C9ØAFØ             :REM*9
1Ø7 DATA 32C9ØBFØ1ØC9ØCFØ2FC9*Ø
    DFØ3ØC9ØEFØ31C9ØFFØ*32A9ØØ9
    1F86ØA9ØF91F8             :REM*126
1Ø8 DATA 6ØA9Ø991F86ØA9ØE91F8*6
    ØA9Ø891F86ØA9Ø991F8*6ØA9Ø29
    1F86ØA9ØB91F8             :REM*62
1Ø9 DATA 6ØA9Ø591F86ØA9Ø691F8*6
    ØA9ØC91F86ØA9ØØ8D3B*Ø385Ø26
    ØAØØØA92Ø85F8             :REM*136
11Ø DATA A9DØ85F9A2ØØ2Ø85CØE6*F
    8E8EØØ4DØF6A9ØØ85F8*A9D885F
    92Ø85CØE6F8DØ             :REM*7Ø
111 DATA Ø2E6F9A5F8C9E8FØØ34C*2
    4C1A5F9C9DBFØØ34C24*C1EE3BØ
    3AD3BØ3C9Ø4FØ             :REM*113
112 DATA Ø16ØA9Ø185Ø26ØD82ØC9*C
    12Ø9BB786FA2ØFFC118*AD35Ø36
    D34Ø385F8A5F9             :REM*173
113 DATA 69D885F9A2ØØAØØØA5FA*9
    1F8C8CC36Ø3FØØ34C7Ø*C1E8EC3
    7Ø3FØ1Ø18A5F8             :REM*37
114 DATA 692885F8A5F969ØØ85F9*4
    C6CC16ØD82ØC9C12Ø9B*B786FA2
    ØFFC12Ø46C3A2             :REM*182
115 DATA ØØAØØØA5FA91F8C8CC36*Ø
    3FØØ34CA7C1E8EC37Ø3*FØ1Ø18A
    5F8692885F8A5             :REM*87
116 DATA F969ØØ85F94CA3C16Ø2Ø*9
    BB7EØ28BØ2C8E34Ø32Ø*9BB7EØ1
    9BØ228E35Ø32Ø             :REM*117
117 DATA 9BB7EØ28BØ18EC34Ø39Ø*1
    38E36Ø32Ø9BB7EØ19BØ*Ø9EC35Ø
    39ØØ48E37Ø36Ø             :REM*216
118 DATA 4CØ8AF38AD36Ø3ED34Ø3*1
    869Ø18D36Ø338AD37Ø3*ED35Ø31
    869Ø18D37Ø318             :REM*221
119 DATA A9ØØA2Ø86A6E35Ø39ØØ3*1
    86928CA1ØF485F96ØD8*AD3AØ3C
    9Ø89ØØ34CFCC1             :REM*167
12Ø DATA 2ØC9C12ØØCC3AØØØB934*Ø
    391FAC8CØØ4DØF6EE3A*Ø32Ø39C
    3A2ØØ2Ø64C2AD             :REM*63
121 DATA 38Ø385F818AD39Ø369D8*8
    5F9A2ØØAØØØ8C34Ø3B1*F8AØØØ9
    1FAAC34Ø3E6FA             :REM*4
122 DATA DØØ2E6FBC8CC36Ø3FØØ3*4
    C66C2E8EC37Ø3FØ1Ø18*A5F8692
    885F8A5F969ØØ             :REM*123
123 DATA 85F94C64C26ØD8AD3AØ3*D
    ØØ34CØ8AFCE3AØ32ØØC*C378A93
    585Ø1AØØØB1FA             :REM*192
124 DATA 9934Ø3C8CØØ4DØF62Ø39*C
    3A2ØØ2ØD8C2AD38Ø385*F818AD3
    9Ø369D885F9A2             :REM*164
125 DATA ØØ2ØD8C2A93785Ø1586Ø*A
    ØØØ8C34Ø3AØØØB1FAAC*34Ø391F
    8E6FADØØ2E6FB             :REM*226
126 DATA C8CC36Ø3FØØ34CDAC2E8*E
    C37Ø3FØ1Ø18A5F86928*85F8A5F
    969ØØ85F94CD8             :REM*166
127 DATA C26ØA9ØØ85FAAØØ8AD3A*Ø
    3186D3AØ388CØØØDØF7*85FBAD3
    AØ3C9Ø4BØØA18             :REM*1Ø5
128 DATA A5FB69AØ85FB4C38C318*A
    5FB69CØ85FB6Ø18A5FA*69Ø485F
    A2ØFFC18D39Ø3             :REM*59
129 DATA 18AD35Ø36D34Ø385F88D*3
    8Ø3AD88Ø265F985F96Ø*2Ø9BB7E
    ØØØFØ51EØØ5BØ             :REM*249
13Ø DATA 4D8AA88C36Ø32Ø9BB72Ø*8
    2C38E34Ø32Ø9BB72Ø82*C3EC34Ø
    39Ø348E35Ø36Ø             :REM*51
131 DATA AC36Ø3CØØ3BØØ5E Ø28BØ*2
    56ØE Ø19BØ2Ø6ØAE36Ø3*EØØ1FØØ
    CEØØ2FØØBEØØ3             :REM*56
132 DATA FØØAEØØ4FØØ94CB5C34C*3
    2C44CB2C44C3DC54CØ8*AFAD88Ø
    285F985FBA9ØØ             :REM*253
133 DATA 85FA85FEA92885F885FC*A
    9D885FD85FFA9CØ8D38*Ø3A9DB8
    D39Ø3AC34Ø3B1             :REM*172
134 DATA F891FAB1FC91FECC35Ø3*F
    ØØ4C84CDBC318A5F869*2885F8A
    5F969ØØ85F918             :REM*254
135 DATA A5FA692885FAA5FB69ØØ*8
    5FB18A5FC692885FCA5*FD69ØØ8
    5FD18A5FE6928             :REM*29
136 DATA 85FEA5FF69ØØ85FFA5FE*C
    D38Ø3DØØ7A5FFCD39Ø3*FØØ34CD
    8C36Ø18AD88Ø2             :REM*137
137 DATA 69Ø385F985FBA9C Ø85FA*8
    5FEA99885F885FCA9DB*85FD85F
    FA9ØØ8D38Ø3A9             :REM*5
138 DATA D88D39Ø3AC34Ø3B1F891*F
    AB1FC91FECC35Ø3FØØ4*C84C5BC
    438A5F8E92885             :REM*221
139 DATA F8A5F9E9ØØ85F938A5FA*E
    92885FAA5FBE9ØØ85FB*38A5FCE
    92885FCA5FDE9             :REM*23Ø
14Ø DATA ØØ85FD38A5FEE92885FE*A
    5FFE9ØØ85FFA5FECD38*Ø3DØØ7A
    5FFCD39Ø3FØØ3             :REM*215
141 DATA 4C58C46Ø2ØF7C4AØØØC8*B
    1F88891F8C8B1FA8891*FAC8CØ2
    7FØØ34CB7C4A5             :REM*13Ø
142 DATA FACD38Ø3DØØ8A5FBCD39*Ø
    3DØØ16Ø18A5F8692885*F8A5F96
    9ØØ85F918A5FA             :REM*34
143 DATA 692885FAA5FB69ØØ85FB*4
    CB5C4AD34Ø385FC2Ø2A*C5A5FC8
    5F885FA18A5FD             :REM*24Ø
144 DATA 6D88Ø285F918A5FD69D8*8
    5FBAD35Ø385FC2Ø2AC5*A5FC8D3
    8Ø318A5FD69D8             :REM*151
145 DATA 8D39Ø36Ø18A9ØØA2Ø86A*6
    6FC9ØØ3186928CA1ØF5*85FD6Ø2
    ØF7C4AØ2788B1             :REM*48
146 DATA F8C891F888B1FAC891FA*8
    8FØØ34C42C5A5FACD38*Ø3DØØ8A
    5FBCD39Ø3DØØ1             :REM*153
147 DATA 6Ø18A5F8692885F8A5F9*6
    9ØØ85F918A5FA692885*FAA5FB6
    9ØØ85FB4C4ØC5             :REM*156
148 DATA D82Ø C9C12ØFFC12Ø46C3*A
    2ØØAØØØB1F8498Ø91F8*C8CC36Ø
    3FØØ34C8EC5E8             :REM*221
149 DATA EC37Ø3FØ1Ø18A5F86928*8
    5F8A5F969ØØ85F94C8C*C56Ø2ØF
    DAE2Ø8AAD2ØF7             :REM*2Ø4
15Ø DATA B784F885F92ØFDAE2Ø8A*A
    D2ØF7B784FA85FBC5F9*FØØ5BØØ
    94C48B2A5FAC5             :REM*155
151 DATA F89ØF72Ø9BB7AØØØ8A91*F
    8AAA5FAC5F8DØØ7A5FB*C5F9DØØ
    16ØE6F8DØØ2E6             :REM*85
152 DATA F94CE2C52ØFDAE2Ø8AAD*2
    ØF7B78C34Ø38D35Ø32Ø*FDAE2Ø8
    AAD2ØF7B78C36             :REM*11
153 DATA Ø38D37Ø32ØFDAE2Ø8AAD*2
    ØF7B784FA85FBAD37Ø3*CD35Ø3F
    Ø05BØØB4CD4C5             :REM*8
154 DATA AD36Ø3CD34Ø39ØF5AD35*Ø
    3C5FBFØ56BØ5D38AD36*Ø3ED34Ø
    38D38Ø3AD37Ø3             :REM*86
155 DATA ED35Ø38D39Ø318AD38Ø3*6
    5FA85FAAD39Ø365FB85*FBAD36Ø
    385F8AD37Ø385             :REM*228
156 DATA F9AØØØB1F891FAA5F8CD*3
    4Ø3DØØ8A5F9CD35Ø3DØ*Ø16ØA5F
    8DØØ2C6F9C6F8             :REM*82
157 DATA A5FADØØ2C6FBC6FA4C73*C
```

```
    6AD34Ø3C5FA9ØA5FØE3*AD34Ø38
    5F8AD35Ø385F9          :REM*14
158 DATA AØØØB1F891FAA5F8CD36*Ø
    3DØØ8A5F9CD37Ø3DØØ1*6ØE6F8D
    ØØ2E6F9E6FADØ          :REM*212
159 DATA Ø2E6FB4CAEC6      :REM*29
16Ø DATA -1                :REM*18
```

Listing 2. Text FX Demo program. (Available on ReRUN disk. See order card facing page 48.)

```
1Ø IF PEEK(49152)=76 AND PEEK(4
   9153)=39 THEN 3Ø        :REM*36
2Ø LOAD"TEXT FX.ML",8,1:REM*2Ø3
3Ø POKE5328Ø,6:POKE53281,12:DIM
   A$(15):POKE826,Ø:GOSUB54Ø
                           :REM*167
4Ø SA=49152:WI=SA:WF=SA+3:FI=SA
   +6:FS=SA+9:CF=SA+12:TF=SA+15
   :WS=SA+18:WR=SA+21      :REM*149
5Ø SI=SA+24:MS=SA+27:IC=SA+3Ø
                           :REM*5Ø
6Ø PRINT "{SHFT CLR}{CRSR DN}{C
   TRL 8}RUN MAGAZINE PRESENTS
   ..."                    :REM*196
7Ø PRINT"{5 CRSR DNs}"SPC(14)"{
   CTRL 2}TEXT FX DEMO"    :REM*29
8Ø PRINTSPC(19)"{CRSR DN}{CTRL
   1}BY"                   :REM*111
9Ø PRINTSPC(13)"{CRSR DN}{CTRL
   7}BRANDON CORFMAN"      :REM*211
1ØØ PRINTSPC(8)"{6 CRSR DNs}{CO
    MD 4}PRESS {CTRL 9}RETURN{C
    TRL Ø} TO CONTINUE"    :REM*17
11Ø GETZ$:IFZ$<>CHR$(13)THEN11Ø
                           :REM*232
12Ø SYSFI:FORT=1TO1ØØØ:NEXT
                           :REM*167
13Ø SYSFS:IFPEEK(2)=.THEN13Ø
                           :REM*229
14Ø FORI=1TO1ØØØ:NEXT      :REM*56
15Ø PRINT "{SHFT CLR}{8 CRSR DN
    s}{CTRL 1}"SPC(7)"YOU JUST
    SAW AN EXAMPLE OF"     :REM*Ø
16Ø PRINTSPC(6)"TEXT FX'S FADES
    CREEN COMMAND."        :REM*46
17Ø PRINTSPC(6)"{3 CRSR DNs}NOW
     HIT {CTRL 9}RETURN{CTRL Ø}
     FOR A LOOK AT"        :REM*68
18Ø PRINTSPC(8)"ITS WINDOW CAPA
    BILITIES."             :REM*146
19Ø SYSCF,Ø,Ø,39,24,11:SYSCF,Ø,
    Ø,39,24,12:SYSCF,Ø,Ø,39,24,
    15:SYSCF,Ø,Ø,39,24,1
                           :REM*166
2ØØ GETZ$:IFZ$<>CHR$(13)THEN2ØØ
                           :REM*16
21Ø SYSCF,Ø,Ø,39,24,15:SYSCF,Ø,
    Ø,39,24,12:SYSCF,Ø,Ø,39,24,
    11:SYSCF,Ø,Ø,39,24,Ø
                           :REM*111
22Ø PRINT"{SHFT CLR}":FORI=1TO1
    ØØØ:NEXT               :REM*239
23Ø POKE5328Ø,11:POKE53281,12:S
    YSCF,Ø,Ø,39,24,1:SYSTF,Ø,Ø,
    39,24,33               :REM*31
24Ø SYSWS,4,5,35,16:SYSCF,4,5,3
    5,16,6:SYSTF,4,5,35,16,16Ø:
    SYSTF,5,6,34,15,32 :REM*185
25Ø PRINT"{HOME}{CTRL 1}{7 CRSR
     DNs}"SPC(5)"TEXT FX SUPPOR
    TS UP TO 8"            :REM*136
26Ø PRINTSPC(5)"WINDOWS ON-SCRE
    EN AT ONE TIME."       :REM*183
27Ø PRINTSPC(5)"THIS SIMPLE EXA
    MPLE UTILIZES"         :REM*69
28Ø PRINTSPC(5)"THE WINDOW COMM
    ANDS ALONG WITH"       :REM*228
29Ø PRINTSPC(5)"THE TEXTFILL CO
    MMAND TO CREATE"       :REM*242
3ØØ PRINTSPC(5)"A BORDER FOR TH
    E WINDOW."             :REM*196
31Ø PRINTSPC(5)"{CRSR DN}PRESS
    {CTRL 9}RETURN{CTRL Ø} NOW
    TO CONTINUE."          :REM*2Ø
32Ø GETZ$:IFZ$<>CHR$(13)THEN32Ø
                           :REM*234
33Ø SYSWS,13,9,32,18:SYSCF,13,9
    ,32,18,2:SYSTF,13,9,32,18,2
    Ø9                     :REM*2Ø2
34Ø SYSTF,14,1Ø,31,17,32
                           :REM*15Ø
35Ø PRINT"{HOME}{11 CRSR DNs}"S
    PC(14)"{CTRL 8}TO TAKE A LO
    OK AT"                 :REM*23
36Ø PRINTSPC(14)"A DAZZLING EFF
    ECT"                   :REM*245
37Ø PRINTSPC(14)"CREATED WITH T
    HE"                    :REM*155
38Ø PRINTSPC(14)"COLORFILL AND"
                           :REM*59
39Ø PRINTSPC(14)"TEXTFILL COMMA
    NDS,"                  :REM*Ø
4ØØ PRINTSPC(14)"PRESS {CTRL 9}
    RETURN{CTRL Ø}"        :REM*71
41Ø GETZ$:IFZ$<>CHR$(13)THEN41Ø
                           :REM*22
42Ø SYSWR:FORI=1TO1ØØØ:NEXT:SYS
    WR:FORI=1TO1ØØØ:NEXT
                           :REM*146
43Ø FORI=ØTO12:SYSTF,12-I,12-I.
    27+I,12+I,16Ø:SYSCF,12-I,12
    -I,27+I,12+I,3:NEXT:REM*237
44Ø POKE53281,Ø:POKE5328Ø,Ø
                           :REM*37
45Ø FORI=ØTO12:SYSTF,12-I,12-I,
    27+I,12+I,32:SYSCF,12-I,12-
    I,27+I,12+I,Ø:NEXT :REM*255
46Ø SYSSI,2,Ø,39           :REM*95
47Ø SYSMS:Z=Z+1:PRINT"{HOME}"A$
    (Z);:IFZ<15THEN47Ø :REM*186
48Ø GETZ$:IFZ$=""THEN 48Ø
                           :REM*162
49Ø IFZ$="{FUNCT 1}"THEN 53Ø:
                           :REM*246
5ØØ SYSWI,Ø,1Ø,39,14   :REM*234
51Ø SYSWF:FORI=ØTO1Ø:NEXT:IFPEE
    K(2)=ØTHEN51Ø          :REM*227
52Ø CLR: GOTO 3Ø           :REM*1Ø5
53Ø END                    :REM*144
54Ø FORI=6TO15:A$(I)="{4Ø SPACE
    s}":NEXT               :REM*171
55Ø A$(1)="{CTRL 4}{CRSR DN}PRE
    SS A KEY TO RUN AGAIN OR {C
    TRL 9}F1{CTRL Ø} TO END"
                           :REM*175
56Ø A$(2)="{4Ø SPACEs}" :REM*89
57Ø A$(3)="PROGRAMMING - AND MA
    KES IT MORE FUN TOO!"
                           :REM*88
58Ø A$(4)="{CTRL 8}TEXT FX{CTRL
     4} SPEEDS UP YOUR BASIC{12
     SPACEs}"              :REM*218
59Ø A$(5)="FROM SCREEN SCROLLIN
    G TO COPYING DATA,":REM*223
6ØØ RETURN                 :REM*228
```

Listing 3. Sample routine for using WindowInit and WindowFade. (Available on ReRUN disk. See order card facing page 48.)

```
1Ø IF A=Ø THEN A=1:LOAD "TEXT F
   X.ML",8,1:REM LOAD TEXT FX
                           :REM*166
2Ø SA=49152:REM STARTING ADDRES
   S OF TEXT FX            :REM*212
3Ø SYS SA,1Ø,1Ø,2Ø,2Ø:REM SET U
   P THE FADE WITH WINDOWINIT
                           :REM*5
4Ø SYS SA+3:IF PEEK(2)=Ø THEN 4
   Ø:REM LOOP FOR WINDOWFADE
                           :REM*214
```

Listing 4. Sample routine for using ColorFill and TextFill. (Available on ReRUN disk. See order card facing page 48.)

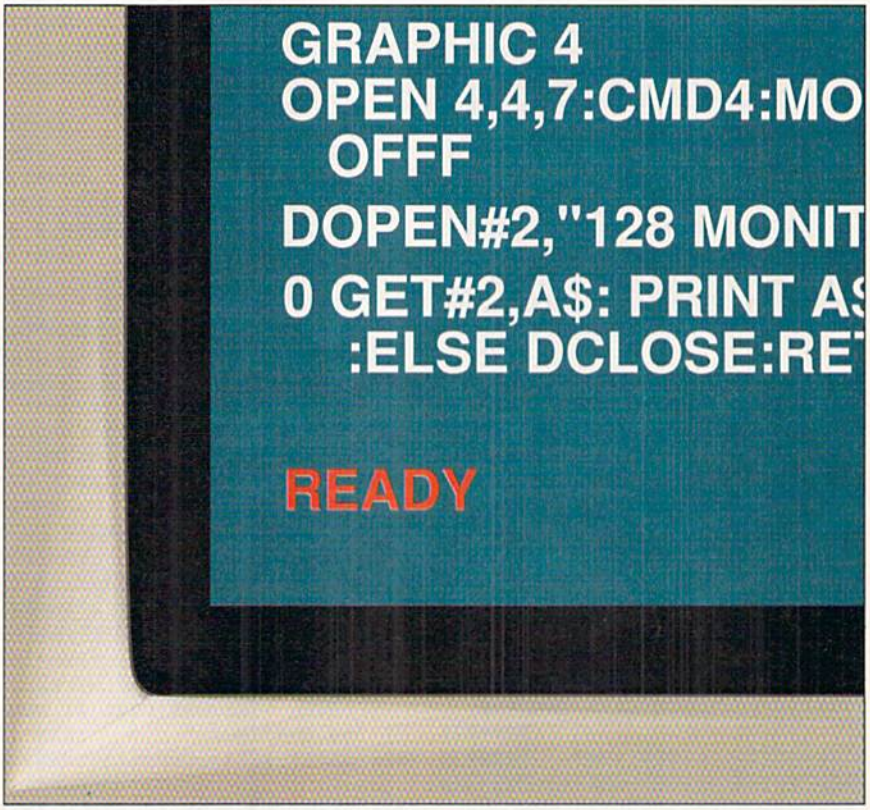
```
1Ø IF A=Ø THEN A=1:LOAD "TEXT F
   X.ML",8,1:REM LOAD TEXT FX
                           :REM*166
2Ø POKE 826,Ø:REM ALWAYS, ALWAY
   S USE THIS POKE BEFORE USING
    WINDOW COMMANDS!       :REM*4Ø
3Ø SA=49152:CF=SA+12:TF=SA+15:W
   S=SA+18:REM DEFINE VARIABLES
                           :REM*94
4Ø SYS WS,1Ø,1Ø,2Ø,2Ø:REM SAVE
   A WINDOW                :REM*59
5Ø SYS CF,1Ø,1Ø,2Ø,2Ø,1:REM FIL
   L THE WINDOW WITH THE COLOR
   WHITE                   :REM*25
6Ø SYS TF,1Ø,1Ø,2Ø,2Ø,16Ø:REM F
   ILL THE WINDOW WITH REVERSED
    SPACES                 :REM*129
7Ø SYS TF,11,11,19,19,32:REM CL
   EAR A SMALLER WINDOW INSIDE
   THE LARGER ONE          :REM*191
```

■

128 Mode

This month we direct our attention to handy uses for Direct mode.

By MARK JORDAN



ACCORDING TO the official Commodore literature, Direct mode is "the mode of operation that executes Basic commands immediately after the return key is pressed." For example, DLoad and Run are Direct mode operations. You can't, as they say, miss it, but you certainly can miss using Direct mode to its fullest potential.

Almost the entire Basic vocabulary works in Direct mode, and the rules for using Direct mode are quite simple:

1. You can stack commands as long as they're separated with a colon.
2. You must have your cursor on the line to be executed.
3. You must press the return key to start execution.

Program Debugging

Direct mode commands can be executed with or without a program in memory. When one is resident, Direct mode lets you check or change variables, read values in Data statements, jump in and out of Program mode, and more. Jumping from one mode to the other is especially handy. Both GoTo and GoSub can get you from Direct mode to Program mode, but GoSub offers the further advantage of shipping you back.

A reversal of this process can be forced by using the Stop and Cont commands. When the computer encounters the Stop command within a program, it halts Program mode and kicks in Direct mode. There, you can do work like checking variables, and, when you're done, head back into the program with Cont.

I employed these commands in the Horseshoes game that appeared in the August/September issue of *RUN*. To test for the location of a toss, I inserted GRAPHIC 0:STOP in the program immediately after the toss landed. This transported me to the text screen in Direct mode where I could type PRINT RSPPOS(1,0) to see exactly which pixel the horseshoe sprite landed on.

Graphics Design

Direct mode's strength is especially evident in designing graphics screens for use in a Basic program. This is normally tricky and slow, because you can't see what a graphic will look like until you run the program. Direct mode offers three clever ways to view your work as you create it.

The first method is to place the computer in Split Screen mode with GRAPHIC 2 (or 4, for multicolor). If you're designing a graphic that will occupy half a screen or less, set the split at about line 12 (GRAPHIC 2,1,12). Then move your cursor down until it appears in the text area, press escape followed by T, and you'll have defined the bottom half of the screen as a text window. Once that's done, it's a simple matter to type any graphics commands you want to try, press return, and watch the commands execute in the top half of the screen. (Just remember to locate them in the top.) When you've got your circles and lines the way you want, insert a line number in front of each graphics command, and it becomes a permanent part of your program.

In the second method, if you want to fill the bottom half or all of the screen with graphics, you'll need a different technique: the old screen switcheroo. Type your graphics commands on the 80-column screen, then switch your monitor to 40-Column mode to observe the results. You don't even need to enter ESC X to go back and forth, since the graphics commands will do their work even while you're editing in 80-Column mode. Be sure you're in Slow mode, or you won't be able to see the graphics.

The only drawback to this technique is the wear and tear on the switch. If this bothers you, or if you're really in a hurry, you can use a third method: typing blind. Just keep the screen in Graphics mode while you type the commands. The fact that you can't see what you're typing doesn't mean it's not there. (Type in GRAPHIC 0 if you don't believe me.)

Channeling

With apologies to Shirley MacLaine—Direct mode offers more powerful channeling than any I've read about in the tabloids. You can use it to save and print out (on paper) all kinds of information. The key to using this power is knowing the ropes of the Open command.

The Open command establishes a line of communication between the comput- ►

ILLUSTRATED BY ANN DILLON

er and a peripheral. When using it, you must follow it with a file number (any number from 0 to 255 will do), then a device number. A device number of 3 accesses the screen (with some interesting possibilities), 4 accesses the printer, and 8–11 access the disk drives. After you've opened the channel, CMD gets the conversation going.

Let's say you want to turn your computer into a calculator, complete with printout, from Direct mode. Begin with OPEN 4,4,7:CMD 4, which will send anything you ask to be printed to the printer instead of the screen. For example, the Direct mode command PRINT 26 * 2 would send 52 to the printer.

That's easy enough. Now, what if you want to save your machine language disassembly from the built-in machine language monitor? The same OPEN and CMD line would work. Here's how they would look in a one-line stack:

```
OPEN 4,4,7:CMD4:MONITOR:D0E00
  0FFF
```

To exit the monitor, wait until the printing is done, then type X, and, finally, close the channel (CLOSE 4).

Opening a channel to the disk drive is even more handy, because you can use the newer command, DOpen. The line

```
DOPEN#2,"filename",W.:CMD2
```

will send information that would normally be printed to the screen to a file instead, thereby saving it. Be sure to have the ",W" tacked on to the end, so the computer knows it's to write information rather than read it.

Here's a sneaky trick: Use the Append command in Direct mode to tack messages on to the end of files. If you're too tired to boot up your word processor and wait for your diary file to load, type

```
APPEND#2,"Diary":CMD2:PRINT "Too
  tired today.":D CLOSE
```

press return and, sure enough, the phrase will appear at the bottom of your previous file (along with the Ready prompt).

By the way, the CMD command in the above cases isn't absolutely necessary. If you omit it, you can still print to the device that's open by using PRINT# instead of PRINT.

You can also read data in Direct mode—that is, if you cheat a little. The cheating is necessary because Basic 7.0 won't let you use GET# or INPUT# outside of Program mode. Begin by opening your file of choice, then insert the one-liner

```
0 GET#2,A$: PRINT A$;:IF ST=0 THEN 0
  :ELSE DCLOSE:RETURN
```

Now enter GOSUB 10 and watch the data flow past.

The best way to really squeeze the juice out of Direct mode is to try it yourself. The more you use it, the more you'll want to choose it. ■

Mark Jordan, who teaches high school English, has been in Commodore Programming mode during his spare time for many years.

GET MORE FEATURES FOR

BIBLE STUDY

LANDMARK The Computer Reference Bible offers:
- Complete Old and New Testaments in King James Version or New International Version. Individual verse (marginal) references, words of Christ in color, complete NIV footnotes and a Concordance.
- Searching for up to 12 partial words, wildcard characters, words or phrases at once. Search not only the Bible, but also your own files, or even the results of a search, to narrow your search down further.
- Creating of your own files, using the built in text editor to copy Scripture, text or search results into your file. You can also convert your files for use with most wordprocessors, like Paperclip and GEOS to add graphics or different type styles.
- Compiling your own Personal Bible containing all your notes, comments, outlining of text in color and keep it organized. Make new references, add to the existing references, or reference your own files!
- Compatibility with all disk drives for the C64/128 including 1541, 1571, 1581, SFD1001, and hard disk drives. Also will take advantage of cartridge or hardware speedup products like FAST LOAD or Jiffy DOS to improve performance of the program. Entire Bible with references fits onto eight 1581 disks. **C64** v1.2 and **C128** v2.0 on same program disk!

KJV $89.95 NIV $99.95/Both $155.00
plus $4.00/$6.50 shipping in cont. USA

CALL OR WRITE FOR FREE BROCHURE
P.A.V.Y. Software P.O. Box 1584
Ballwin, MO 63022 (314) 527-4505
MC/VISA accepted. Foreign orders call or write for shipping charges

FOOTBALL • BASKETBALL

SPORTS FANS...
THE SPORTS SIMULATIONS YOU HAVE BEEN WAITING FOR ARE HERE!

3 IN 1 FOOTBALL
• with Stats Compiler for each player and team • you choose from 14 offensive plays and 6 defensive formations • includes 180 college teams and the 28 Pro teams from the '89 • season PLUS 174 great college and 189 great pro teams of the past

BASKETBALL: THE PRO GAME
• each player contributes as they did in real life • Stats Compiler • you determine starting lineup, substitutions, shot selection, passing, offensive and defensive styles of play and more • the Pro Game features the 23 Pro teams from '89-'90 and more than 190 great teams of the past

Send check or money order for **$39.99** each.
Visa and MasterCard accepted on phone orders only.
Please add $2.00 for postage and handling.

LANCE HAFFNER GAMES

P.O. Box 100594 • Nashville, TN 37224 • 615/242-2617

ProTips

Tips on how to use commercial productivity software, ranging from personalizing form letters to debugging a printer driver.

By HAROLD R. BJORNSEN

GEOS (VERSION 2.0): If you use a 1571 disk drive with this operating system, always choose the "Format both sides of disk" option, as it will give you twice as much room on a disk for files.

The best investment for GEOS is a 1764 REU. I've found the most productive way to employ the unit is to copy the frequently used applications onto a disk that contains the deskTop icon and a printer driver file. I then use the Commodore key to select the files I want to copy to the REU, and replace the disk with my data disk when the copying is complete. That way, I'm always working in the REU and need only access the drive when I save a file.

—Joel M. Sanda
Boise, ID

GEOS deskTop (VERSION 2.0): If you want to rearrange the files on a page, use this time-saving method. Using the Multi-file function (hold down the Commodore key while you point and click), pick up the files in the order you will eventually want them on your page. Move them to the border, then select all files (from the Select menu, or press Commodore/Y) and replace them on the page. They will be placed back in the order you picked them up.

—Steve Vander Ark
Grand Rapids, MI

geoWrite: This GEOS program takes forever to redraw the screen if it is filled with your prose. And, if you use more than one font, geoWrite must access a drive to get the information for the new font; it does this every time the font changes on the screen.

One way around this is to use a 1750 REU, which costs around $200. However, if you don't want to spend that much money, here are a few tips to make your geoWriting easier. When you're typing, advance your text to the top of the screen now and then by moving down the page until there is only a line or two of text left at the top of the screen. This will ensure that GEOS has a minimum of text to redraw each time you shift around the screen. Or, you can speed things up by typing your text in BSW 9-point first, and then change the fonts when you're finished typing. Simply highlight the text you want to change, and then click on the Font box at the top of the screen. Select the font and appropriate point size, and geoWrite will do the rest. This trick also works with the options in the Style box.

—Steven John Satak
Seattle, WA

PaperClip III: With this word processor, I can easily produce "personalized" form letters. I first load the form letter with the variable blocks. Then I open the variable datafile with control/shift Z, manually fill the blocks (control/shift V), edit the letter according to my needs, change the disk drive number to 9 (F1, F1), and save the "personalized" letter on unit 9. Next, I change the disk drive number back to 8, empty the blocks (control/shift N), and fill them again with the next variable data. If I want, I can edit this letter, too, and save it again on a disk on another drive. When all this is done, I print the letters, and each one is similar. This capability is undocumented in the users' manual.

—Michael Habermann
Baltimore, MD

RUN Shell: If you're a RUN Shell user (*RUN*, July 1989 and Super Starter Pak), you may become a little flustered at times when the program corrupts the operating system in both 64 and 128 modes. For instance, after copying some files and pressing the F1 key to exit RUN Shell, you may have discovered that the Run command no longer functions.

There's an easy, surefire solution that doesn't require powering down the computer. After exiting RUN Shell, enter SYS DEC("4000") on the C-128 or SYS 64378 on the C-64 to reset your computer. Now you have access to all Basic commands.

To reactivate RUN Shell, just type SYS 4864 in either 64 or 128 mode. You'll find that these tips will greatly increase the usefulness of both the 64 and 128 version of RUN Shell.

—Paolo Ghinque
Buffalo, NY

Word Writer 4 (VERSION 9-1.2): I've found a bug in the Commodore MPS-1200 printer driver. To use Font mode, these switches must be set: SW1-2 (on), SW1-3 (on). This puts the driver into Epson/ASCII mode.

To use Draft mode, these switches must be set: SW1-2 (on), SW1-3 (on), SW1-7 (on, or linefeeds, option E, on). This puts the printer into Epson/ASCII mode with automatic linefeeds.

To format an 80-column document in a 40-column document, load the 80-column file and go to the top of the document. Then insert the checkmark (control/£) and enter "m,0,40". Next, run through the document and add hard returns (Commodore/R) at the end of each line. If you don't add these returns, the file will resave in its original format. Resave the file under a new name that reflects the format change.

—Alan Rateliff II
Cannon AFB, NM

Word Writer 128: The line that contains the checkmark, margin and line length information can be used as a REM line for special reminders such as naming which printer is to be used, or which printer codes apply. The term REM is not needed; the line will not go to the printer anyway.

The line that contains the checkmark and printer codes must not be used as a REM line. In fact, an invisible space after the code will cause the printer to ignore or misinterpret the directions. If you suspect this problem, run the cursor across the code line to see if it goes even one space too far to the right. If so, delete everything past the code.

—Robert M. Mayo
Baton Rouge, LA ■

From p. 6.

Basic program that was erased by the New command will be restored automatically. There's no need to remember any Pokes or other commands, and you don't have to load this handy utility before it's needed.

```
Ø REM UNNEW 64 - D.J. LAURIA          :REM*185
1Ø PRINT"{SHFT CLR}{CRSR DN}THIS PROGRAM C
   REATES A FILE NAMED UNNEW ON DISK."
                                      :REM*213
2Ø PRINT"{CRSR DN}PRESS ANY KEY TO BEGIN:
   "                                  :REM*236
3Ø POKE198,Ø:WAIT198,15:POKE198,Ø     :REM*11
4Ø FORI=1TO74:READA:N=N+A:NEXT        :REM*2Ø9
5Ø IFN<>6932THENPRINT"ERROR IN DATA STATEM
   ENTS.":END                         :REM*38
6Ø OPEN15,8,15,"IØ":OPEN8,8,8,"Ø:UNNEW,P,W
   ":INPUT#15,E,E$                    :REM*8Ø
7Ø IFETHENPRINT"{CRSR DN}DISK ERROR> {CTRL
    9}";E;E$:CLOSE8:CLOSE15:END       :REM*2Ø2
8Ø RESTORE:FORI=1TO74:READA:PRINT#8,CHR$(A
   );:NEXT:CLOSE8:CLOSE15:END         :REM*19
9Ø DATA 188,2,76,211,2,13,8Ø,82,79,71,82,6
   5,77,32,82,69,83,84,79,82,69       :REM*2Ø4
1ØØ DATA 68,46,13,13,169,1,141,2,8,32,51,1
    65,165,34,133,45,165,35,133,46    :REM*72
11Ø DATA 169,131,141,2,3,169,164,141,3,3,1
    62,Ø,189,191,2,32,21Ø,255,232     :REM*42
12Ø DATA 224,2Ø,2Ø8,245,32,96,166,1Ø8,2,3,
    139,227,188,2                     :REM*127
```

—D. J. LAURIA, BARRINGTON, RI

$5A9 More "New" Relief

A nice compliment to the above program is my Are You Sure? 64 program. Like the C-128, which gives you the "Are you sure?" prompt when you issue certain disk commands, this does the same when the New command is given in 64 mode.

To use it, just type in the listing, save it to disk, and then run it. Afterwards, whenever you type NEW, the "Are you sure?" prompt will appear. Pressing any key other than Y will preserve your file in memory. It's a great safeguard for anyone who programs in Basic on the C-64.

```
Ø REM ARE YOU SURE PROMPT 64 - PAUL FRAZIE
  R                                   :REM*195
1Ø FORJ=53Ø93 TO 53245:READ A:POKE J,A:NEX
   T:SYS 53Ø93                        :REM*186
2Ø PRINTCHR$(147)"'ARE YOU SURE ?' PROMPT
   IS ACTIVE."                        :REM*211
3Ø DATA 173,4,3,141,254,2Ø7,173,5,3,141,25
   5,2Ø7,169,124,141,4,3,169,2Ø7      :REM*16
4Ø DATA 141,5,3,96,173,Ø,2,2Ø1,78,24Ø,3,1Ø
   8,254,2Ø7,173,1,2,2Ø1,69,2Ø8       :REM*195
5Ø DATA 246,173,2,2,2Ø1,87,2Ø8,239,169,13,
   32,21Ø,255,169,65,32,21Ø,255       :REM*96
6Ø DATA 169,82,32,21Ø,255,169,69,32,21Ø,25
   5,169,32,32,21Ø,255,169,89,32      :REM*85
7Ø DATA 21Ø,255,169,79,32,21Ø,255,169,85,3
   2,21Ø,255,169,32,32,21Ø,255        :REM*215
8Ø DATA 169,83,32,21Ø,255,169,85,32,21Ø,25
   5,169,82,32,21Ø,255,169,69,32      :REM*151
9Ø DATA 21Ø,255,169,63,32,21Ø,255,169,Ø,13
   3,198,32,228,255,2Ø1,Ø,24Ø         :REM*228
1ØØ DATA 249,24,2Ø1,89,2Ø8,3,1Ø8,254,2Ø7,2
    4,169,32,162,Ø,157,Ø,2,232,224:REM*11Ø
11Ø DATA 81,2Ø8,248,24,1Ø8,254,2Ø7:REM*177
```

—PAUL W. FRAZIER, LEBANON, PA

$5AA No Overflow 64/128

Anyone who has tried to perform mathematical calculations on his or her Commodore knows the limitations of the 64/128. The largest number for which a factorial can be calculated is only 33, whereas a scientific calculator can compute 69.

No Overflow 64/128 alleviates that problem with a simple base-ten logarithm. My program lets your 64 or 128 calculate a factorial from any number up to 5109! Be forewarned, however, that the larger your number, the longer the calculations take.

```
Ø REM NO OVERFLOW 64/128 - DENNIS CULLEY
                                      :REM*77
1Ø INPUT "FIND FACTORIAL OF";N:F=1:P=Ø:C=1
                                      :REM*36
2Ø IFC+11<N THEN FOR X=C TO C+9:F=F*X:NEXT
   :C=C+1Ø:GOSUB 5Ø:GOTO2Ø            :REM*89
3Ø FOR X=C TO N:F=F*X:NEXT:GOSUB5Ø:REM*212
4Ø PRINTN;"FACTORIAL = ";F;"E";P:GOTO1Ø
                                      :REM*214
5Ø L=INT(LOG(F)/LOG(1Ø)):P=P+L:F=F/1Ø{UP A
   RROW}L:PRINTL: RETURN              :REM*186
```

—DENNIS ALLEN CULLEY, WEST CHICAGO, IL

$5AB Memory Display 64

Programmers, listen up! Tired of exiting your programs and typing PEEK (X) to find the value of a memory location? With Memory Display 64, the contents of any memory location are displayed in binary numerals in the upper-left corner of the screen.

After running Memory Display 64, which is relocatable in memory, you can enter a memory location for, say, joystick input, and watch the results as you move the joystick. While the number is displayed in white, you can change the color by entering POKE 828,X, where X is a number from 0 to 15.

```
Ø REM MEMORY DISPLAY 64 - STEPEHEN DIRSCHA
  UER                                 :REM*163
1Ø FOR T=828 TO 897:READ A:POKE T,A:NEXT
                                      :REM*1Ø6
2Ø INPUT "ENTER LOCATION";LC:HI=LC/256
                                      :REM*25
3Ø LO=LC-256*HI:POKE 861,LO:POKE 862,HI
                                      :REM*25Ø
4Ø SYS 828                            :REM*174
5Ø DATA 12Ø,174,2Ø,3,172,21,3,142,13Ø,3,14
   Ø,131,3,162,85,16Ø,3,142,2Ø,3      :REM*Ø
6Ø DATA 14Ø,21,3,88,96,169,128,141,132,3,1
   6Ø,Ø,173,133,3,45,132,3,2Ø5        :REM*24
7Ø DATA 132,3,24Ø,5,169,48,76,11Ø,3,169,49
   ,153,Ø,4,169,1,153,Ø,216,2ØØ       :REM*19Ø
8Ø DATA 192,8,24Ø,6,11Ø,132,3,76,92,3,76
                                      :REM*11Ø
```

—STEPHEN DIRSCHAUER, TORONTO, ONTARIO, CANADA ■

GOLD MINE

Gaming tips this month include giving aid to your Contra and learning how to make your Last Ninja last longer.

By LOUIS F. SANDER

CONTRA: While in the tunnel scenes, if you drop to the floor and fire at the wall, you'll get a capsule, usually either Laser or Scatter Fire.

—BRITAIN WOODMAN
ANN ARBOR, MI

LAST NINJA 2: In Central Park, kill the thug in the theater. Punch the flashing light. Go back to the first screen and drop down the trapdoor. Get the key. The pieces for the numchucks are in the toilets guarded by the stick warriors. To get extra lives, eat lots of hamburgers. The shurikens are in the basket in the screen before the knife-throwing clown. To pass the clown, get as close as you can. Flip down the sidewalk instead of running. Get the map in the next screen. Climb up the iron gate, then walk south. Jump across the ledges in the next screen. Get the stick, then jump back. Climb down the iron gate backwards. Flip past the clown to the next screen north, then go west. Unlock the gate with your key. In the next screen, hop on the boat and wait until it stops before jumping to the other side. Go south. You must destroy the beehive with the shurikens.

In the city, the tools you must get are the sword, the manhole key and the drunk man's bottle.

In the sewer, get past the alligator by lighting the drunk man's bottle with the low-hanging torch. Use this Molotov cocktail like shurikens to destroy the alligator.

In the opium factory, climb the ladder and go south. Get the card key and go north, north, east. Enter the office and get the fried chicken in the dog bowl. Go down the ladder. Get as close to the rails as you can, and run across them as soon as the rail car passes. Play hopscotch over the crates to cross the moat. Go as southeast as you can, then dip the fried chicken in the open bag of opium. Go to where you enter the laboratory, then go east. Give the drugged fried chicken to the guard dog. Jump over him, then use the card key to enter the elevator.

In the office building, go into the first room and search the computer. Remember the four-digit number. In one of the rooms, there is a secret door, activated by tugging on a lamp string. To get past the fan, get against the wall and run north, north, east (your man will run in slow motion). Remove the screen door. Go outside the building and go south, south, west on the ledges. Climb the ladder. Wait until the helicopter goes away, then sprint off the north end of the building and flip.

In the mountain hideaway, push the firebutton when you are lined up with the ledge closest to the top of the screen. Jump south. Go to the bedroom and cut the rope off the bell ringer. There is a secret door down the stairs behind a plant. Fix the pipes with the rope; otherwise, you'll die if you try to pass through the steam.

In the final confrontation, pull on the Oriental wall rug. Open the safe using the code from the computer, then take the disk out. To kill the man in white, you have to strike him down in the middle of the room and light all the candles. (I find it's easiest to light all the candles except one, then strike him down. When he's unconscious, I light the last candle to "lift his spirits.") Put the disk back into the safe, then accept my congratulations for completing this excellent game!

—RAYMOND W. LOUIS
KINGS PARK, NY

NEUROMANCER: The biggest hint I can give is to read the book. This will give you information on the world and the characters, and an understanding of some of the inside jokes.

As soon as possible, move all or most of your money to another bank. The Justice Department can only get at the money in the PAX Bank.

Use the message from Armitage to get more money. Answer the message, transfer the money to your credit chip, then get arrested and fined. Alternatively, you can transfer all the money from the bank to your credit chip, then get arrested and killed. If you have nothing in your chip, having your brain kickstarted costs nothing.

Get a job, but don't apply for it. Instead, use a corporate database that lets you edit employee names and ID numbers, put your own name into the database, then go and collect your paycheck.

Larry Moe can be a hindrance to you, since he won't let you by. Find his ID in the corporate databases, then give it to the police.

Use skill chips to combat Artificial Intelligences (AIs). You can use the Psychotherapy skill to determine their current weakness, then hit them with whatever skill is appropriate.

Don't worry about old friendships when buying a cyberspace deck. You can get ten percent off anything at Asano Computing if you insult Crazy Edo.

Watch out for the program from CFM. It will destroy you.

In cyberspace Zone 0 (Cheap Hotel), AIs are in the Psychologist and Chess Databases. The databases with the most useful software are Regfellows (208/32) and Panther Moderns (224/112).

When you're near the man in Zion Cluster, don't mention anything having to do with computers, cyberspace or banks. It will offend him, and he'll send you back to Chiba City. He is, however, impressed by a good musician.

Avoid the Massage Parlor. You may learn something important, but you'll get arrested.

—JOSHUA BRANDT
STAYTON, OR ■

Send your C-64 or C-128 game tips to Gold Mine, PO Box 101011, Pittsburgh, PA 15237. Put your name, complete address and Social Security number on every sheet of paper you send, and please use 8½-by-11-inch paper. Be sure to state which Commodore computer your tip is for. RUN *pays $5 per submission upon publication.*

To order a book of over 1200 Gold Mine tips on 500 games for Commodore computers, call TAB Books at 800-822-8158 (in Pennsylvania, call 717-794-2191). Ask for Book #3323.

SPECIAL OFFER FROM RUN MAGAZINE!

MODEM LIQUIDATION SALE!

ONLY $10.00!

HURRY! Supplies Limited!

GET A BRAND-NEW...

Commodore 1660® modem for only $10.00! It's the perfect telecommunications starter kit for every C64 and 128 owner!

WHAT CAN A MODEM DO?

It hooks your C64 or 128 via a phone line to the excitement of telecommunications. Use it to get in touch with other Commodore users, connect to on-line services (like Q-Link, GEnie, and CompuServe), access local bulletin boards, and so much more!

WHY SUCH A LOW PRICE?

The 1660 modem is a 300 baud model –slower than today's modems, but still easy to use and extremely affordable. If you've never used a modem — this one's for you!

YOU GET ALL THIS!

- Commodore 1660® Modem
- Cable to connect to your phone line.
- Commodore's "Common Sense®" software.
- Complimentary Q-Link Starter Kit (with FREE software and FREE time on Q-Link!).
- All for just $10.00!

YES! Send me a brand-new 1660 modem for only $10.00, plus $3.50 shipping & handling per modem.

My [ ] check [ ] MasterCard [ ] Visa [ ] AmEx [ ] Discover account information is enclosed:

Account# _____ Exp. _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Please allow 4-6 weeks for delivery. Outside North America, surface shipping/handling is $6.00. Payment in U.S. funds drawn on U.S. bank, or by Visa, MasterCard or American Express. Limit: 3 modems per order. All sales final. All modems have 30 day replacement guarantee.

RUN Modem Offer, 80 Elm St., Peterborough, NH 03458

603-924-9471 or 1-800-343-0728 MD1190

HURRY!

Order now, because the supply is definitely limited!

Call

1-800-343-0728

or mail this coupon, today!

GEOWATCH

For geoBasic owners who want to create stand-alone applications, this program helps you save memory and disk space.

By WILLIAM COLEMAN

GEOBASIC LETS YOU create "stand-alone" applications; that is, programs that can run without the need for the geoBasic file itself. Unfortunately, however, a stand-alone geoBasic file takes up much space, approximately 30K. I wrote geoStripper to remove extraneous data and return your program to the size of the original source code. GeoStripper, a short GEOS program, runs on any version of GEOS, in either 64 or 128 mode.

Type in Listing 1, using *RUN*'s Checksum program to catch any typing errors. Then save the program to disk with a filename other than geoStripper. Next, place a GEOS work disk in drive 8 of a 1541 or 1571—*not a 1581*—disk drive. When you run the program, it creates geoStripper on the work disk.

GeoStripper is easy to use: You simply double-click on the geoStripper icon. You'll then see a list of the stand-alone files on the disk. Select the file you want to strip and click on open. You can also click on the Disk icon if you want to insert a different disk. For those users with more than one drive, I've included a drive icon that toggles among drives A, B and C.

Note that geoStripper directly modifies the file you've selected, so always make a duplicate of that file *before* stripping. R

William Coleman, a tester of geoBasic as it was going through its development stages, now monitors RUN*'s geoBasic area on QuantumLink.*

Listing 1. Create geoStripper program. (Available on ReRUN disk. See order card facing page 48.)

```
Ø REM * CREATES GEOS PROGRAM GE
  OSTRIPPER *           :REM*161
1 DR=8:FI$="GEOSTRIPPER":TY$=CH
  R$(6):GOTO 9          :REM*77
2 HI=INT(A/256):LO=A-HI*256:PRI
  NT#15,"M-R"CHR$(LO)CHR$(HI)
                        :REM*211
3 GET#15,A$:A=ASC(A$+CHR$(Ø)):R
  ETURN                 :REM*82
4 PRINT#15,"U1:"2;Ø;TR;SC:RETUR
  N                     :REM*134
5 PRINT#15,"U2:"2;Ø;TR;SC:RETUR
  N                     :REM*254
6 PRINT#15,"B-P:"2;PS:RETURN
                        :REM*77
7 GET#2,A$:A$=LEFT$(A$+CHR$(.),
  1):RETURN             :REM*23Ø
8 PRINT#2,CHR$(A);:RETURN
                        :REM*11Ø
9 DIM D$(29):PRINT "CREATING "F
  I$:OPEN3,DR,3,FI$+",U,W"
                        :REM*157
1Ø READ A$:PRINT ".";:IF A$="-1
  " THEN CLOSE 3:GOTO 15
                        :REM*97
11 FOR I=1 TO LEN(A$):IF MID$(A
  $,I,1)=" " THEN A$=LEFT$(A$,
  I-1)+MID$(A$,I+1)     :REM*217
12 NEXT:FOR I=1 TO LEN(A$) STEP
   2:H$=MID$(A$,I,1):L$=MID$(A
  $,I+1,1)              :REM*227
13 H=16*(VAL(H$)-(H$>"@" AND H$
  <"G")*(ASC(H$)-55)) :REM*192
14 PRINT#3,CHR$(H+(VAL(L$)-(L$>
  "@" AND L$<"G")*(ASC(L$)-55)
  ));:NEXT:GOTO 1Ø      :REM*132
15 OPEN 15,DR,15:OPEN 2,DR,2,"#
  ":OPEN 3,DR,3,FI$:CLOSE 3
                        :REM*237
16 A=656:GOSUB 2:DB=A:A=66Ø:GOS
  UB 2:DE=A:TR=18:SC=DB:GOSUB
  4                     :REM*236
17 PS=DE:GOSUB 6:FOR I=Ø TO 29:
  GOSUB 7:D$(I)=A$:NEXT:TR=ASC
  (D$(1))               :REM*189
18 SC=ASC(D$(2)):GOSUB 4:GOSUB
  7:XT$=A$:GOSUB 7:XS$=A$:GOSU
  B 4                   :REM*6Ø
19 A=Ø:GOSUB 8:A=255:GOSUB 8:A=
  3:GOSUB 8:A=21:GOSUB 8:GOSUB
   5                    :REM*14Ø
2Ø D$(19)=D$(1):D$(2Ø)=D$(2):D$
  (1)=XT$:D$(2)=XS$:D$(21)=CHR
  $(Ø):D$(22)=TY$       :REM*56
21 D$(23)=CHR$(9Ø):D$(24)=CHR$(
  Ø7):D$(25)=CHR$(3Ø):D$(26)=C
  HR$(11)               :REM*174
22 D$(27)=CHR$(23):TR=18:SC=DB:
  GOSUB 4:PS=DE:GOSUB 6
                        :REM*249
23 FOR I=Ø TO 29:PRINT#2,LEFT$(
  D$(I),1);:NEXT:GOSUB 5:CLOSE
   2:CLOSE 15           :REM*42
24 PRINT:PRINT "DONE!":END
                        :REM*254
25 :                    :REM*83
26 DATA Ø315BFFFFFFØ8ØØØ18BF 8Ø
  14AØ8Ø12BF8Ø1F84ØØ Ø18EØØØ18
  4ØØØ1BF97F1           :REM*155
27 DATA AØFC13BF97F58ØØØ8987 FF
  9184ØØ338EØØ5F84ØØ ADBF81D9A
  Ø82F1BF8261           :REM*194
28 DATA 84Ø1C1FFFFFF83Ø6ØØØØ Ø4
  FFØ3ØØØ46762537472 697Ø7Ø657
  22Ø2Ø56312E           :REM*75
29 DATA 3ØØØØØØ4Ø57696C6C69 61
  6D2Ø432E2Ø436F6C65 6D616E2ØØ
  ØØØØØØØØØØ           :REM*66
3Ø DATA ØØØØØØØØØØØØØØØØØØØØ ØØ
  ØØØØØØØØØØØØØØØØØØ ØØØØØØØØØ
  ØØØØØØØØØØ           :REM*98
31 DATA ØØØØØØØØØØØØØØØØ5475 72
  6E732Ø612Ø5374616E 642D416C6
  F6E652Ø6765           :REM*1Ø1
32 DATA 6F426173696632Ø5Ø726F 67
  72616D2Ø6261636B2Ø 696E746F2
  Ø736F757263           :REM*141
33 DATA 652Ø636F64652EØØØØØØ ØØ
  ØØØØØØØØØØØØØØØØØØ ØØØØØØØØØ
  ØØØØØØØØØØ           :REM*248
34 DATA ØØØØØØØØØØØØØØØØØØØØ ØØ
  ØØØØØØ2Ø3Dø52Ø32Ø5 2Ø5AØ5A9Ø
  985ØFA94B85           :REM*73
35 DATA ØE2ØØBC2AØ16A9Ø791ØC 2Ø
  E7C12ØF6Ø4AD148485 Ø5AD13848
  5Ø42ØE4C12Ø           :REM*36
36 DATA F6Ø4AØ79B98CØ699Ø28Ø 88
  1ØF72ØE7C12ØF6Ø4A9 Ø985Ø3A94
  B85Ø22Ø74C2           :REM*1Ø6
37 DATA 2ØF6Ø4A9ØØ8D96842Ø83 C2
  2Ø86C2EE9684AD9684 C9ØA9ØFØ2
  Ø77C2AD8D84           :REM*2
38 DATA C9Ø39ØØ3CE8D84AD4AØ9 2Ø
  BØC22ØA1C24C2CC2A5 BA8D4AØ98
  D49Ø9AD8D84           :REM*59
39 DATA C9Ø1FØ25ADØFCØC92Ø9Ø 1E
  AD9Ø84FØ1929ØF8D48 Ø9AD8E842
  9ØFCD48Ø9FØ           :REM*232
4Ø DATA Ø7ADC488294ØFØØ3EE8D 84
  4CE1C1AE8D84CAFØ15 2ØDØØ48D4
  9Ø92ØBØC22Ø           :REM*67 ►
```

RUN it right: **C-64 or C-128; 1541 or 1571; GEOS (any version)**

Hurry!
First Come, First Served!

RERUN

~~Just $9.97 per Disk! (per order of 3 or more)~~

3-for-1 Clearance Sale!!!

3 for $16.47!!

RUN magazine has long published the acclaimed ReRUN software series of useful, economical programs for the C-64 and C-128!

Now, after a long absence, ReRUN's entire program library is available again—at reduced prices! Take a look at this extensive collection of personal productivity software, utilities, games, educational programs and much more! But hurry—quantities are limited!

* Denotes program runs in C-128 mode. ** Denotes both C-64 and C-128 modes. All other programs run in C-64 mode only.

#4 Landlord. Invoices. Money Manager. Teacher. Number Puzzle. Graphmaker. Joystick Artist. SOLD OUT

#5 Auto Menu. Disk Doctor. Big Letters. Title Maker. Turtle Graphics. Calculator. Test Maker. Home Run Derby.

#26 Stack 64. Credit Cards 64. Word Jumbler. Lister. * Ultra Hi-Res. Baroque Music.

#27 * Reminder 128. ** Retir'eze. * Twiddle. * Mind Your Mortgage. Keeping Up to Date. Hook Up to a Portable. Monthly Labels, Envelope Maker.

#28 * RUNTerm 128. RUN's Memo Book. Calendar Maker. RUN Copy 64. Time Keeper 64. * Blank-It 128. C-64 Sprite ML Commands.

#46 RUN Script 64. Create Your Own Keypad. Songfest. Autoboot. Automatic Line Numbers. * Gradebook 128. A Modern Metronome. SOLD OUT

#47 DataFile 3.6. DFPrint. DFCalc. * C-128 Screen Dump. Commodore in the Kitchen. The Menu Machine.

#48 ** Home Inventory. Commodore Lanes. * Time Keeper 128. Window Construction Set. Fantastic 64. Video Flash Cards. Mister Poster. SOLD OUT

#65 Pay the Bills. Ultraquiz. Perfect Pitch. Spirited Sprites. Wedge Utilities. Brainstorming. RUN Assembler. Songfest. SOLD OUT

#66 Disk Reader. Swish! Label Maker. Arithme-Sketch. Murder Mystery. * Ultra Hi-Res II.

#67 * Presto Write 128. * 80-Column Custom Windows. PrintRite 64. Disk Stuffer. 64 Notepad Command Center. Puzzler's Choice.

#68 Moving Messages. * Graphix to the Max. * Tick-Tock 128. ** Form Writer. Unlockup. Math Whiz. Now You See It.

#86 * Video Fantasia. Hi-Res Writer. Needlegraph. Extra! Extra! Read All About It! Disk Keeper. * 3-D Object Editor.

#87 Tri-Solitaire. Attention, Shoppers! * Linker 128. Flash Cards. DFClone. * Typing Tachometer 128. Electronic Address Book. Pegboard.

#88 Alphabet Cadet. The Amazing 16-Color Print Machine. * Bill Minder. Travel Tally. ** Loan Analysis. Islands! Video Poker. ** Mom's Kitchen Aid.

#106 ** Loan Arranger. Turtle-Tutor for Tykes. Programmers, Take Note! Sign Maker. Instant Data Statements. 64 Personal Ledger.

#107 * 128 Notepad. Phaser Phire. Screen Genie. DFCopy. * Outline 128. The Money Program. Cursor Commotion.

#108 Programmer's Pager. Knock! ** Vacation List Generator. ** Easy Banners. Joystick Mouse Emulator. ** Instant Test Maker.

#126 CalcAid 64. Put It on Paper. Dashing Off the Dots. Math Square-Off. * Micro Artist. Extra! Newsletter Graphics. * RUN Script 128.

#127 64 DOS Shell. Wordman. * Color Hi-Res Graphics. Super Sort. Delete 64. Sizzle! Brickout! * RUN Investor. Smart Shopper. SOLD OUT

#128 For Good Measure. Mystery Match. * Savings Forecaster. ** Mass File Deleter. Crazy Caverns. ** Finance 64/128. * Instant Address Book. SOLD OUT

#P1 **Productivity Pak I.** (in limited quantities) DataFile. DFMail. DFReport. DFPrint. DFCalc. RUNTerm. Screen Print. Finance Aid. Disk Master. Graph Maker.

#P2 **Productivity Pak II.** (in limited quantities) ** RUN Script. * Reminder. * Gradebook. 1670 Autodial. RUNTerm Plus. Logo for Kids. Disk Backup. DataFile. SOLD OUT

#P3 **Productivity Pak III.** ** RUN Script 64/128. ** RUN File 64/128. ** RUN Calc 64/128. ** RUN Notepad 64/128. * RUN Investor 128. RUN Dex 64. 30 LEFT

Buy 1 disk at the regular price—and get 2 more for FREE! Postage Paid!

ORDER NOW! CALL 1-800-343-0728

Please send me the following **ReRUN** disks:

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

~~1–2 disks $16.47 each~~
3 or more $9.97 each
3 For $16.47

Total Disks _____
Price/Disk _____
Total Due $ _____

☐ Payment Enclosed
☐ Charge my: ☐ Amex ☐ MC ☐ VISA ☐ Discover

Account # _____ Expires _____

Signature _____

Name _____

Address _____

City, State, Zip _____

ReRUN, 80 Elm St., Peterborough, NH 03458 1-800-343-0728

Foreign Orders: Add $1.95 per disk for air mail. Payment required in US Funds drawn on US Bank.

RRBI1190

```
41 DATA A1C28AF00620B4B07B850 EB
   60AD8D84C901F01B18 690088D480
   9AD49091869              :REM*91
42 DATA 01CD480990022A9080A8B9 86
   84F0F09860AD4909600 8AF005686
   84C4B0760A9              :REM*224
43 DATA 12CDOFC0100 7AD13C010 02
   A53F60ADB784D01CA9 1AA0054C3
   60520320 5A5             :REM*140
44 DATA 0718690885071 8A90865 0A
   850A9002E60B4C24C1 A90EA2058
   DB1848EB284              :REM*0
45 DATA 60A9022039C1A9800852F 20
   FF043000EAD008C8D58 05204B4C1E
   803008C006O              :REM*136
46 DATA 20FF041020ADFD05090800 8D
   FD05AD02060980800 02 06AD0D060
   9808D0D06AD              :REM*153
47 DATA 8006098080800620 7D04 A9
   068D7D06A9268D7C06 AE8D84CAD
   0080A9008D7C             :REM*104
48 DATA 068D7D06A9068D14060A4 BA
   B986841005A9008D14 0620A1C22
   01D07A9008D              :REM*89
49 DATA 4B09A09850DA94B850C A9
   06851 0A9068517A923 8516A9058
   503A9FB8502              :REM*188
50 DATA 2005070502C902D0034C 67
   04C906D00EA907850 3 A98F85022
   0050 7B850AA             :REM*177
51 DATA C914D0062 0B404B850A0 60
   810B820A180 60B8214 5C0910040
   4051119121 1             :REM*197
52 DATA 3B7C060211 4C06112A00 18
   6F6E206469736B3A1B 00C2DF000
   5FF82FE8004              :REM*207
53 DATA 0082038004 00B80380F8 00
   C0000380CC0000000 3 80C6FDD99
   E038 0C6E0D9             :REM*91
54 DATA B3038 0C6C0D9B3038 0C6 C0
   CF3F038 0C6C0CF3003 80CCCC0C63
   3038 0F8C0C6             :REM*51
55 DATA 1E038004 00820380040 81
   0306FF817F05FF0CBF 26060000
   61084 06A914             :REM*6
56 DATA 8D1D854CBFC2 0315BFFF FF
   F080001 8BF80 14A080 12BF801F8
   4000 18E001              :REM*7
57 DATA 84001BF8BF9A0FE09BF 8B
   F980008187FF8184 00 018E00018
   4001BF8001               :REM*48
58 DATA A08001BF8001840001FF FF
   FF8306010004FF0300 046261736
   9632070726F              :REM*192
59 DATA 6720205631 2E300000000 00
   0000000000000000000 0000000000
   0000000000               :REM*72
60 DATA 0062617369630 0A97185 3C
   A900853BA9E5853A20 FF041004 0
   63A263B4C56              :REM*111
61 DATA C2AD4909 38E908 0AA8B9 45
   0785 02B946 0785 03A0 00B1 02F00
   AC9A0F00699              :REM*250
62 DATA 5C09C8D0F2A900995C09 60
   1E843 04DC88E02 0B0 07CA8A0AA
   8B85021E073              :REM*76
63 DATA D00AA900885 0DA9F785 0C D0
   1DE02A900AA900985 0D A9048 50CD
   00F8AE913 0A             :REM*220
64 DATA A8B91A0985 0CB91B0985 0D
   A9078503A9BC85022 0 05074C67 0
   481 0B1 0109 9           :REM*132
65 DATA 0701114800184 96E7365 72
   742 06E65772 0646973 6B2 0696E7
   46F2 0646973             :REM*22
66 DATA 6B2 064726976652E1B00 81
   0B1 010 0A909C1 03 00C 01114800 4
   E6F742 0456E             :REM*43
67 DATA 6F7567682 426C6F636B 73
   00496E76616C69642 0 547261636
   B00496E7375              :REM*242
68 DATA 6666696369656E742053 70
   616365 0046756C6C2 0 446972656
   3746F7279 00             :REM*46
69 DATA 46696C652 04E6F742046 6F
   756E64 0042616142042 414D2 0696
   E2 04726976              :REM*204
70 DATA 65 0556E6F70656E6564 2 0
   564C49522 046696C65 0053747 27
   56374757265              :REM*139
71 DATA 2 04D69736D6174636800 42
   7566666572204F7665 72466C6F7
   700435F4552              :REM*224
72 DATA 52 04E6F2 04465766963 65
   004E6F2 04865616465 72 0556E6
   66F726D6174              :REM*174
73 DATA 7465642 04469736B 04E 6F
   2 0446174612 0426C6F 636B 0044 6
   174612 04368             :REM*241
74 DATA 65636B73756D 0496E63 6F
   6D70617461626C652 0 46696C657
   4797065730 0             :REM*29
75 DATA 5772697465 256657269 66
   790 05772697465 205 0 726F74656
   374 00486561             :REM*179
76 DATA 6465722 0436865636B73 75
   6D00494420 4D69736D 617463680
   0444F532 04D             :REM*167
77 DATA 69736D6174636800 3F3F 3F
   3F3F00182A2 0446973 6B2 045727
   26F722 02A00             :REM*118
78 DATA CA07DC07EA07FD07 0C08 1B
   082C08040904093F08 52086208 6
   8087 2087C08             :REM*230
79 DATA 8D089B08A908C008CD08 DB
   08040 9EB08              :REM*130
80 DATA -1                  :REM*193
```

■

RUN is a publication of International Data Group, the world's largest publisher of computer-related information. International Data Group publishes over 130 computer publications in more than 40 countries. Nineteen million people read one or more of International Data Group's publications each month. International Data Group's publications include: ARGENTINA's *Computerworld Argentina*; ASIA's *Asian Computerworld*; AUSTRALIA's *Computerworld Australia, PC World, Macworld*; AUSTRIA's *Computerwelt Oesterreich*; BRAZIL's *DataNews, PC Mundo*; CANADA's *Computer Data*; CHILE's *Informatica, Computacion Personal*; COLUMBIA's *Computerworld Columbia*; DENMARK's *CAD/CAM WORLD, Computerworld Danmark, PC World, Macworld, Unix World*; FINLAND's *Mikro PC, Tietoviikko*; FRANCE's *Le Monde Informatique, Distributique, InfoPC, Telecoms International*; HUNGARY's *Computerworld SZT, Mikrovilag*; INDIA's *Computers & Communications*; ISRAEL's *People & Computers*; ITALY's *Computerworld Italia, PC World Italia*; JAPAN's *Computerworld Japan, Infoworld, Publish*; KOREA's *Hi-Tech Information/Computerworld*; MEXICO's *Computerworld Mexico, PC Journal*; THE NETHERLANDS' *Computerworld Netherlands, PC World, AmigaWorld*; NEW ZEALAND's *Computerworld New Zealand, PC World New Zealand*; NIGERIA's *PC World Africa*; NORWAY's *Computerworld Norge, PC World Norge CAD/CAM, Macworld Norge*; PEOPLE'S REPUBLIC OF CHINA's *China Computerworld, China Computerworld Monthly*; POLAND's *Computers*; SPAIN's *CIM World; Communicaciones World, Computerworld Espana, PC World, AmigaWorld*; SWEDEN's *ComputerSweden, Mikrodatorn, PC/Nyheterna, PC World, Macworld*; SWITZERLAND's *Computerworld Schweiz*; TAIWAN's *Computerworld Taiwan, PC World*; UNITED KINGDOM's *Graduate Computerworld, PC Business World, ICL Today, Lotus UK, Macworld U.K.*; UNITED STATES' *AmigaWorld, CIO, Computerworld, Digital News, Federal Computer Week, GamePro, inCider, InfoWorld, International Custom Publishing, MacWorld, Network World, PC Games, PC World, Portable Computing, PC Resource, Publish!, RUN, SunTech Journal*; USSR's *World USSR, Manager, PC Express, Network*; VENEZUELA's *Computerworld Venezuela, Micro Computerworld*; WEST GERMANY's *Computerwoche, Information Management, PC Woche, PC Welt, AmigaWelt, Macwelt.*

MOVING?

Subscription Problem?

Get help with your subscription by calling our new toll free number:

1-800-274-5241

In Colorado: **1-447-9330**

between 9 a.m. and 5 p.m. EST Monday–Friday

If possible, please have your mailing label in front of you as well as your cancelled check or credit card statement if you are having problems with payment.

If moving, please give both your old address and new address.

RUN

P.O. Box 58711
Boulder, CO 80322-8711

DYNAMICALLY MODIFIABLE BULLETIN BOARD SYSTEM

The Bulletin Board Of The 90's

- Full Commodore™ color graphics & ASCII
- Fully compatible with CMD's HD series & Xetec's Lt. Kernal hard drives.
- Fully supports JiffyDos operating environment & various other burst ROM's
- 300-2400 baud, Supports 1650, 1660, 1670, Avatex & ALL Hayes compatibles!
- C64, 64C, SX64, C128, C128D (64 mode), 1700 series RAM expanders, ALL 1541's & compatibles, 1571, 1581, SFD 1001
- Menu driven, user-friendly BBS
- On-line game modules available
- NOT Copy Protected, make as many back-ups as you need.
- 2- 24 hour BBS main support numbers
- 1 Voice support number
- Various info lines throughout North America
- INCLUDED: CLEAR AND CONCISE MANUAL IN A SLEEK BINDER

D.M.B.B.S. Series V

$69.95

Includes BASIC Source Code.

update from Version 4.0 $39.95

Add $5. s/h $8. outside U.S.
MD Res. add 5% sales tax

20% Discount on D.M.B.B.S. In Exchange for any PAID FOR & Reg. C= 64/128 BBS prog.

30 Day Money Back Guarantee!!!

Dealer Pricing Available

Mail Check or Money Order to: ARTISoft, P.O. Box 96, Glen Burnie, MD 21060

Or Call (Orders Only!) (301) 553-0301

WE OFFER CMD HD's AT DISCOUNT PRICES TO REGISTERED D.M.B.B.S. OWNERS.

ARTISOFT

A division of Dynamic Technologies, Inc.

Inquiries: (301) 553-0201
24 Hr. BBS: (301) 553-0001

"Your best source for computer equipment & access."

WHY?

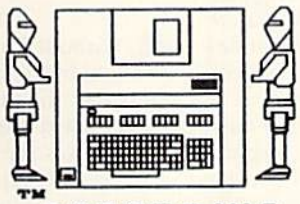
Why do people buy our catalog and products ?
Why have we been in business since 1986 ?
Why do we have steady repeat customers ?

BECAUSE

We have the least expensive, most extensive, best organized disk collection.
We believe in the 8 bit computers.
We try the hardest !!

Our catalog now contains over 350,000 blocks of music, graphics, applications, educational, GEOS, and Basic 8 programs. Most disks avg. less than 10 blocks free per side!

Make an investment in your future, send $2.00 for our catalog to:



PARSEC,INC

Parsec, Inc.
P.O.Box 111
Salem,MA
01970-0111

COLOR RIBBONS & PAPER

COLOR RIBBONS

RED, BLUE, GREEN, BROWN, PURPLE, YELLOW

Ribbons Price Each	Black	Color	Heat Transfer
Brother M1109	4.95	5.95	7.00
Alps ASP 1000	6.00	8.00	—
Citizen 120D/180D	4.50	5.50	7.50
Commodore MPS 801	4.50	5.25	5.75
- MPS 802/1526	6.25	7.25	—
- MPS 803	4.95	5.95	7.00
- MPS 1000	3.50	4.50	6.50
- MPS 1200/1250	4.50	5.50	7.50
- 1525	6.50	8.00	—
Epson MX80/LX800	3.75	4.50	6.75
Okidata 82/92	1.75	2.25	4.50
Okidata 182/192	5.50	7.50	
Panasonic K-XP 1080	5.75	7.75	—
Seikosha SP 800/1000	5.00	6.00	7.50
Star Sg10	1.75	2.25	4.50
Star NX10/NL10	5.00	6.00	7.95
Star NX1000	3.75	4.75	6.75
Star NX1000C - 4-Color	—	6.75	12.00

COLOR PAPER

BRIGHT PACK — 200 Sheets/50 ea. color: Red, Blue, Green, Yellow. 9½x 11 — $10.90/pk.

PASTEL PACK — 200 Sheets/50 ea. color: Pink, Yellow, Blue, Ivory. 9½x 11 — $8.90/pk.

COLOR BANNER, NEON AND BRIGHT, PARTY BANNER, CHRISTMAS BANNER, HAPPY B-DAY BANNER, CONGRATS BANNER — 45'/Roll — $8.95/ea. roll

COLOR CERTIFICATE PAPER — 100 Shts./pk. — $9.95/pk.

T-SHIRT RIBBONS (Heat Transfer) — Call For Price & Avail.
COLORS: Red, Blue, Green, Brown, Purple, Yellow, Black

COLOR DISKETTES

5¼" DS/DD Rainbow Pack/ 10/pack — $12.50

For ribbons & paper not listed above, call for price. Price & spec. subject to change w/o notice. Min. order $25.00. S&H $4.00 minimum. Visa, MC, COD.

RAMCO COMPUTER SUPPLIES

PO Box 475, Manteco, IL 60950 U.S.A.

(U.S.A.) 800-522-6922 • (Canada) 800-621-5444

815-468-8081

COMPUTER REPAIR

205-739-0040

AUTHORIZED COMMODORE SERVICE CENTER

COMMODORE DISK DRIVES
1541 . . . . . $45.00
MSD, 1571 . . . . . 85.00

COMMODORE MONITORS
1701, 1802, 1084,
1702, 1902 . . . . . $85.00

COMMODORE COMPUTERS
C-64 . . . . . $45.00
C-128 . . . . . 85.00
SX-64 Portable. 69.00

COMMODORE PRINTERS
. . . . . $75.00

MOTHERBOARD REPAIR (Send Board Only)
64, 1541 . . . . . $35.00 128, 1571 . . . . . $59.00

Amiga
Call for price

!!! FAST TURNAROUND !!!

All parts and labor included. $6.50 shipping
$15.00 APO and business equipment.

WE BUY ALIVE

C64	$ CALL
1541 NEWT	50.00
1541 ALPS	45.00
SX64	150.00
1571, C128	100.00
1526/802	45.00

MUST BE COMPLETE
$CALL ON DEAD EQUIPMENT

POWER SUPPLIES

C64	$ 21.95
C128	49.95
1541, 1581	36.75
AMIGA 500	75.95
AMIGA 1000	134.95
AMIGA 2000	141.98

CABLES AND MISC.

REG 6 PIN DIN	$ 4.45
12' 6 PIN DIN	6.95
18' 6 PIN DIN	7.95
MONITOR CABLES	4.45
TV SWITCHES	2.50
COMMODORE KEYBOARD	CALL
WICO BAT HANDLE	18.95
DSDD-Disk	25 for 10.95

COMPUTER EQUIPMENT

C64 REFR	$ 99.00
C128 REFR	219.00
1702 CBM	169.00
CBM 1541 ALPS	159.00
STAR NX 1000C	199.00
EPSON INTERFACE	53.95

PARTS

901 ROMS	$11.95
STR54041	12.50
41464	9.95
6560 PULLS	10.00
74LS629	4.95
82S100	12.95
325302	9.95
325572	9.50
8701	6.85
8502	9.00
6526	12.50
6522	4.50
6520	3.85
6532	6.29
6502	2.85
6510	9.95
6581	12.50
6567	19.95
4164	2.75
8721	16.85
C128 UPGRADE ROMS	23.65

COMPUTER SHOPPE OF ALABAMA
1310 2nd Ave. NW, Suite C
Cullman, AL 35055

DEALERS SEND FOR PARTS CATALOG

PRICE SUBJECT TO CHANGE

$25.00 MIN ORDER

COMMODORE CLINIC

Autobooting, sticky keys, and a one-dimensional 1571 are this month's fare.

By ELLEN RULE

Q *I'm using my C-64 in a dedicated application, and I'd like the computer to automatically load and run a program stored on disk when the power is turned on. That way, if there's a power failure, the system will automatically recover when the power is restored. I've written a machine language program (derived from an example in the* C-64 Programmer's Reference Guide*) that can automatically load a program named Autostart, but I don't know how to make it run. Is there an addition I can make to my current machine language program that would run the program? Or is there an expansion cartridge available that does what I've described?*

—BRIAN TORR
SANTA ROSA, CA

Q *I'd like to add autoboot features to GEOS. Is this possible, and if so, how do I go about it?*

—RYAN OLSON
SIMI VALLEY, CA

A The Quick Brown Box (QBB) cartridge, from Brown Boxes, Inc. (26 Concord Rd., Bedford, MA 01730), will provide the exact autostart capabilities you are looking for. A program that is included on the Brown Box utility disk will load and run the first program on your disk. Depending on the size of your application program, and whether it's copy-protected, you may be able to install the application program in the QBB cartridge.

The QBB comes in 64K, 128K and 256K configurations. Brown Boxes has supplied cartridges for many dedicated applications and provides excellent ongoing support.

As for autobooting GEOS, Joe Buckley at Storm Systems has developed programs for booting and autobooting GEOS out of the QBB in both 64 and 128 modes, using Commodore's REU. For more information, contact Storm Systems at 464 Beale St., W. Quincy, MA 02169.

Q *On a number of occasions, the return key on my C-64 has stuck and become inoperative, and I've needed to send the computer out for repairs. Now the cursor-up/down key and, at times, the left shift key won't function. What do you think is the problem?*

—DAVID P. HOLMAN
ERIE, PA

A Without knowing what you were told by the repair technician, I can guess that the problem lies either with the keyboard itself or with the CIA chip that receives the keyboard signal.

When a key is pressed, the metal coating on the bottom of the key makes contact with a small metal pad, causing a short between a row and a column on the keyboard matrix, which sends a signal to the operating system. The metal coating is extremely sensitive to smoke and dirt.

A polymer keyboard protector called SafeSkin, manufactured by Merritt Computer Products, Inc., (5565 Redbird Center Drive, Suite 150, Dallas, TX 75237) can protect your keyboard from liquids and airborne pollutants. Unlike dust covers, SafeSkin stays in place even during keyboard use. Look for this product in your local office supply or computer store. If you can't find SafeSkin in a store near you, try The Memory Location (396 Washington St., Wellesley, MA 02181). Of course, you can also protect your computer's components by reducing airborne pollutants such as smoke.

Some Commodore owners clean their keyboard contacts themselves. This requires some technical expertise, as you must not only open the computer but desolder some wires. Isopropyl alcohol is recommended by computer technicians to remove residue on the keyboard contacts. A word of warning, however: *Don't* use silicon-based keyboard cleaners. These are really meant for typewriter keyboards and leave an oily residue.

There may be an electronic cause for the problem, rather than a mechanical one. The same CIA chip that receives the keyboard input also receives signals from the two joystick control ports. Normally, the keyboard and the joysticks are not made to perform at the same time, so there's no signal conflict. A faulty joystick (sending a continuous signal) or even a joystick that's out of position can corrupt the signal from the keyboard. The next time your keyboard acts strangely, try unplugging the joystick to see if the problem disappears. A Commodore-authorized technician can run diagnostics to determine if a CIA chip needs replacement or whether the problem lies with your keyboard.

Q *My 1571 disk drive works fine loading files, but when it comes to formatting a new disk or saving a file, it doesn't seem to work. Is it possible for a drive to stop formatting and saving, yet do other things?*

—ROSS BELT
OAKLAND, CA

A In the disk drive, a photosensitive switch paired with an LED light source indicate whether the disk is write-protected. The signal this setup produces is sent to a chip that enables the drive's write capabilities. During normal use, a write-protect tab applied to a disk prevents the LED light from reaching the detector. Then the switch sends a signal that the disk is write-protected, and the drive won't write to the disk. Without a tab, the disk is write-enabled.

Failure on the part of the write-protect circuitry will prevent the disk drive from writing to the disk, whether it be to format or save. After you attempt a drive operation, a blinking light on the front of the drive may be a clue that such an error has occurred. A qualified technician can determine whether your problem is with the LED or the drive's electronic circuitry. ■

Do you have questions about your Commodore computer system, software or programming? Just send them to Commodore Clinic, RUN Magazine, 80 Elm St., Peterborough, NH 03458. Queries are answered only through this column, and, due to the volume of mail, only those likely to appeal to a majority of our readers can be published.

MASTERPIECE DESIGNS

IS

a collection of 141 hi-res 640x400 screens packed with borders, objects, patterns, symbols and designs. This collection cover an impressive array. Masterpiece Design contains many beautiful and elegant patterns to frame your Desktop Publishing and works of art. This ad itself was designed using Masterpiece Designs!!

This collection comes with color diskettes, a diskette box and a big 8x11, 74-page manual. Masterpiece Designs is available in any disk format and 2 graphic formats. A utility is supplied for Spectrum 128 users so they can clip from these big screens. All Basic 8 users will require a C-128D or a flat C-128 with 64K VCD RAM.

Circle one: Basic 8 format — GEOS format
Circle one: (4)1481 — (9)1571 — (10)1541 disk formats

Checks and money orders must be in US funds.
$67.90 for US orders $71.90 for Canadian orders

Send your orders to:

Parsec, Inc., PO Box 111, Salem, MA 01970-0111

Masterpiece Design contains a shrink-wrap license which is available for your viewing with a SASE. We acknowledge the trademarks and product names of their respective companies. We can be reached online at: QLink=Parsec GEnie=Parsec CompuServe=76456,3667

8 bitters do it in bytes !

FACTORY AUTHORIZED

COMMODORE REPAIR CENTER

1-800-772-7289

(312) 879-2888 IN ILLINOIS

C64 Repair (PCB ONLY)	42.95	C128D Repair	CALL
C128 Repair (PCB ONLY)	64.95	Amiga Repair	CALL
1541 Permanent Alignment	29.95	Printers	CALL
1541 Repair	79.95	Monitors	CALL
1571 Repair	79.95	Other Equipment	CALL

CALL BEFORE SHIPPING FOR AUTHORIZATION NUMBER
(Have Serial and Card Numbers ready)
PARTS AND LABOR INCLUDED
FREE RETURN SHIPPING
(APO, FPO, AIR ADD $10.00)
24-48 HR. TURNAROUND
(Subject to Parts Availability)
30 DAY WARRANTY ON ALL REPAIRS

COMMODORE PARTS

CALL (708) 879-2350

C-64 Power Supply	34.95*
C-128 Power Supply	59.95*
Other Parts	CALL

*(Plus $3.00 Shipping/Handling)

TEKTONICS PLUS, INC.

150 HOUSTON STREET
BATAVIA, IL 60510

VISA MasterCard

Exclusive Offer From *RUN* Magazine!

SUPER SNAPSHOT 4
UTILITY CARTRIDGE

Attention Programmers and Users! Get the perfect cartridge for your 64 or 128 system—for only $19.95. That's a savings of $15.00 off the manufacturer's retail price.

With the simple press of a button, Super Snapshot 4 enhances your C-64 or C-128 with this incredible assortment of special features:

- Turbo load & save
- Screen dump
- DOS wedge
- Pre-programmed function keys
- Machine language monitor
- Sprite editor and monitor
- File manager
- Fast formatter
- Fast disk copier
- One-key program loads
- Reset switch
- Supports all disk drive formats
- All for just $19.95!

HURRY! ORDER NOW
— quantities are limited.

Call 1-800-343-0728 or mail this coupon today!

YES! Send me the Super Snapshot 4 Utility Cartridge, Operating Manual and System Disk for only $19.95, plus $4 postage and handling. I save $15.00 off the retail price.

☐ Enclosed is my check/money order
☐ Charge my account below:
☐ MasterCard ☐ Discover
☐ VISA ☐ American Express

Account# Exp.

Signature

Name

Address

City State Zip **SS1090**

Please allow 4-6 weeks for delivery. Outside North America, surface shipping/handling is $6.00. Payment in U.S. funds drawn on U.S. bank, or by VISA, MasterCard, American Express or Discover. All cartridges have a 30-day replacement guarantee.

SUPER SNAPSHOT
PO Box 802, Peterborough, NH 03458

RUN's Checksum & Program Typing Hints

TYPE IN *RUN*'S CHECKSUM, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running it. When typing in a program from *RUN*, first load and run *RUN*'s latest version of the Checksum program, which contains a new feature explained below. The screen will display a SYS number (49152 for the C-64; 3328 for the C-128) that deactivates and reactivates the Checksum. Always disable *RUN*'s Checksum before attempting to run another program. Note: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

When you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears in the home position. If this number matches the checksum value in the program listing, the line as you typed it is correct. If the number that appears doesn't match the checksum value, compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing until all the lines have been correctly typed. Then deactivate *RUN*'s Checksum, using the appropriate SYS number, and save the finished program.

We sometimes get letters and phone calls from new readers who have typed in the Checksum program for the first time. They are confused by the "Out of Data Error in Line 30" message that appears when they try to run the Checksum program. Understandably, they compare line 30 of the listing with line 30 as they typed it in, and cannot find anything wrong. The message unintentionally misleads them into thinking the error is in line 30, whereas the typing mistake is actually somewhere in one of the Data statements in lines 190–350.

So, we've added a new feature to the Checksum program that alerts readers to the number of the Data statement line in the Checksum program where an error has actually been made. **Note that this feature works *only* on the Checksum program itself, and not on any other program listing in *RUN*.**

After you've entered and saved the Checksum program to disk, run it. If you've made any errors in any of the Data statements, the program will give you a specific line number. Find the mistake, correct it, press return, save the program and run it again. Repeat this procedure until the Checksum program runs flawlessly.

Control Characters Demystified

All the graphics and control characters in the listings in *RUN* have been translated into understandable key combinations. They are the instructions you see inside the curly braces. For example, {SHIFT L} means you hold down the shift key while you press the L key once. You do *not* type in the curly braces. What appears on the screen will look quite different from what is designated inside the braces. Here are some more examples:

{22 SPACES}—press the space bar 22 times.

{SHIFT CLR}—hold down the shift key and press the clr-home key once.

{2 CRSR DNs}—press the cursor-down key twice.

{CTRL 1}—hold down the control key and press the 1 key.

{COMD T}—hold down the Commodore logo key and press the T key.

{5 LB.s}—press the British pound key (£, *not* #) five times.

Refer to the following paragraphs for any other Error messages you get from running any program listing in *RUN*.

Other Error Messages

Having heard from many users over the years about their difficulties with typing in listings, we've identified a few recurring problems that plague many people but are easy to fix. So read on and see if your problem is one of these.

- You get an "Out of Data in Line xxx" message. This means that a program line was reading from Data statements and reached the end of the data before it was done reading. There are two possible problems.

One might be with the program line that reads the data, usually a For-Next loop. Make sure you have the proper values for the loop, because if, for example, the listing has a loop of 0 to 150, and you've typed 0 to 160, you'll get the Out of Data message. If the loop is correct, then the problem lies in the Data statements themselves. One possibility is that you omitted a whole line of data. That's easy enough to find and correct. It's more likely that you've skipped one or more individual data items or typed in a period instead of a comma, which causes two data values to be read as one number. Check your typing carefully against the listing. Using *RUN*'s Checksum program when you type in listings from the magazine should help in this case.

- You get an "Illegal Quantity Error in Line xxx" message. This means you've read a number from a Data statement and tried to poke it into a memory address. The error occurs because the number is larger than 255 (the largest value a memory address can contain), which means that somewhere in your Data statements you've made an error by typing in a number larger than 255. Again, this is easy to check for and correct. First look in your Data statements for a number larger than 255. You might have added an extra digit, or perhaps you ran two numbers together (23456 instead of 234,56).
- You get a "Syntax Error in Line xxx" message. This could be almost anything. What it tells you is that there is something wrong in the indicated line. Usually you've misspelled a Basic keyword or omitted some required character. List the line and examine it carefully.
- You get an "Error in Data" message. This occurs in programs that add up all the data as read, and, when finished, compares that sum with what it should be if the data were typed in correctly. If it isn't the same, it means an error somewhere in typing the Data statements. Go back and check the data carefully. Correct the mistake(s), save the new version and try again.
- Finally, we urge everyone who intends to type in one of our listings to use *RUN*'s Checksum program, which will help you avoid every mistake we've mentioned above, except that it won't detect the omission of a line. R

Listing. *RUN*'s Checksum program. This program is available on *RUN*'s BBS for users to download.

```
1Ø REM RUN'S CHECKSUM 64/128 - BOB KODADEK
2Ø MO=128:SA=3328:IF PEEK(4Ø96Ø)THEN MO=64:SA=49152
3Ø I=Ø:CK=Ø:CH=Ø:LN=19Ø
4Ø FOR K=Ø TO 16
5Ø FOR J=1 TO 1Ø:READ B:IF B>255 THEN GOTO 17Ø
6Ø CH=CH+B:POKE SA+I,B:I=I+1:NEXT
7Ø READ LC
8Ø IF LC<>CH THEN GOTO 17Ø
9Ø CH=Ø:LN=LN+1Ø
1ØØ NEXT K
11Ø POKESA+11Ø,24Ø:POKESA+111,38:POKESA+14Ø,234
12Ø PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
13Ø PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128 THEN 1
    6Ø
14Ø POKESA+13,124:POKESA+15,165:POKESA+25,124:POKESA+2
    6,165
15Ø POKESA+39,2Ø:POKESA+41,21:POKESA+123,2Ø5:POKESA+12
    4,189
16Ø POKESA+4,INT(SA/256):SYS SA:NEW
17Ø PRINT"YOU HAVE A DATA ERROR IN LINE ";LN;"!":END
18Ø REM DO NOT CHANGE THESE DATA STATEMENTS!
19Ø DATA 12Ø,162,24,16Ø,13,173,4,3,2Ø1,24,884
2ØØ DATA 2Ø8,4,162,13,16Ø,67,142,4,3,14Ø,9Ø3
21Ø DATA 5,3,88,96,32,13,67,152,72,169,697
22Ø DATA Ø,141,Ø,255,133,176,133,18Ø,166,22,12Ø6
23Ø DATA 164,23,134,167,132,168,17Ø,189,Ø,2,1149
24Ø DATA 24Ø,58,2Ø1,48,144,7,2Ø1,58,176,3,1136
25Ø DATA 232,2Ø8,24Ø,189,Ø,2,24Ø,42,2Ø1,32,1386
26Ø DATA 2Ø8,4,164,18Ø,24Ø,31,2Ø1,34,2Ø8,6,1276
27Ø DATA 165,18Ø,73,1,133,18Ø,23Ø,176,164,176,1478
28Ø DATA 165,167,24,125,Ø,2,133,167,165,168,1116
29Ø DATA 1Ø5,Ø,133,168,136,2Ø8,239,232,2Ø8,2Ø9,1638
3ØØ DATA 169,42,32,21Ø,255,165,167,69,168,17Ø,1447
31Ø DATA 169,Ø,32,5Ø,142,169,32,32,21Ø,255,1Ø91
32Ø DATA 32,21Ø,255,169,13,32,21Ø,255,1Ø4,168,1448
33Ø DATA 96,1Ø4,17Ø,24,32,24Ø,255,1Ø4,168,96,1289
34Ø DATA 56,32,24Ø,255,138,72,152,72,24,162,12Ø3
35Ø DATA Ø,16Ø,Ø,32,24Ø,255,169,42,2Ø8,198,13Ø4
```

VIDEO BYTE II the only FULL COLOR! video digitizer for the C-64, C-128

Introducing the world's first **FULL COLOR!** video digitizer for the Commodore C-64, 64-C, C-128, & 128-D computer. **VIDEO BYTE** can give you digitized video from your V.C.R., LASER DISK, B/W or COLOR CAMERA or OFF THE AIR or CABLE VIDEO (thanks to a fast! 2.2 sec. scan time). New version 3.0 software features full **RE-DISPLAY** with **MULTI CAPTURE MODE, BUILTIN PRINTING MODE, EXPANDED COLORIZING MODE, FREEZE COLOR** feature and much, much more! **(Works with P.A.L. system also.)**

FULL COLORIZING! Is possible, due to a unique SELECT and INSERT color process, where you can select one of 15 COLORS and insert that color into one of 4 GRAY SCALES. This process will give you over 32,000 different color combinations to use in your video pictures.
SAVES as KOALAS! Video Byte II allows you to save all your pictures to disk as FULL COLOR KOALA'S. After which (using Koala or suitable program) you can go in and redraw or color your V.B. pic's.
LOAD, DISPLAY & PRINT Video Byte II allows you to load, display & print all **VIDEO BYTE or KOALA** pictures from Video Byte's menu.
MENU DRIVEN! Video Byte II comes with easy to use menu driven UTILITY DISK with V3.0 video digitizer program. (64 MODE ONLY).
COMPACT! Video Byte II is compact! In fact no bigger than most cartridges! VB II **(plugs into MODEM PORT)** comes with 3' cable.
INTEGRATED! Video Byte II is designed to be used with or without EXPLODE! V5.0 color cartridge. Explode! V5.0's menu will return you to VIDEO BYTE II's menu. EXPLODE! V5 is the **PERFECT COMPANION!** AT ONLY **$44.95** or W/DISABLE SWITCH **$49.95.**
FREE! Video Byte II users are automatically sent **FREE SOFTWARE** updates along with new documentation, when it becomes available.
PRINT! Video Byte II will printout **VB or KOALA pictures** in 4 GRAY SCALE to most printers. However when used with Explode! V5.0 your printout's can be done in FULL COLOR 8 by 11's SIDEWAYS on the **RAINBOW NX - 1000, RAINBOW NX - 1000 C, JX - 80, Seikosha 3000 AI. (OKIDATA 10/20's (print larger 6" by 9")**

ONLY $79.95

USER SLIDE SHOW program w/auto or manual display is standard with VIDEO BYTE program. And can be backed up! Why DRAW a car, airplane, person or for that matter . . . anything when you can **BYTE it. . . VIDEO BYTE it instead!**

All units come w/90 day WARRANTY. All orders add $3 for UPS BLUE LABEL S/H. UPS BLUE available only in 48 states. FOREIGN ORDERS are US FUNDS +$6.35 S/H. ORDER BOTH EXPLODE! V5 & VIDEO BYTE II together and receive FREE!! UPS S/H. ***Note all SALES are FINAL, 90 DAY WARRANTY covers PARTS & LABOR ONLY. All SOFT GROUP UTILITY DISKS COME w/built-in CATALOG of PRODUCTS.

*IN 64 MODE ONLY **TO ORDER CALL 1-708-851-6667** IL RESIDENTS ADD 6% SALES TAX PLUS $3.00 S/H. NO C.O.D.'S. FOREIGN ORDERS U.S. FUNDS ONLY $6.35 S/H. Personal Checks 10 Days to Clear

THE SOFT GROUP, P.O. BOX 111, MONTGOMERY, IL 60538

ORGANIZE AND PROTECT YOUR COPIES OF *RUN*

Now there's an easy way to keep copies of your favorite magazine readily available for future reference.
Designed exclusively for *RUN* by Jesse Jones Industries, these custom-made titled cases and binders are sized to hold a year's issues (may vary with issue sized).

RUN
Jesse Jones Industries, Dept. RUN
499 East Erie Ave., Philadelphia, PA 19134

Cases:	1-$7.95	3-$21.95	6-$39.95
Binders:	1-$9.95	3-$27.95	6-$52.95

Enclosed is $ _____
Add $1 per case/binder for postage & handling. Outside USA $2.50 per case/binder (US funds only).

Please send _____ **cases;** _____ binders for *RUN* magazine.

Charge Orders: Call TOLL FREE 7 days, 24 hours 1-800-972-5858 (minimum order $15)

Print Name _____
Address _____
No P.O. Box numbers please
City/State/Zip _____

PA residents add 6% sales tax

SATISFACTION GUARANTEED

VOICE MASTER® Junior

Clearance Sale!

~~$39.95~~ $15.95

RUN Magazine has obtained a limited quantity of the fascinating and useful VoiceMaster Jr. This unique device combines speech output and voice recognition for one amazing low price! Your voice controls programs, appliances and lots more with simple spoken commands. Put VoiceMaster Jr. to use at home, in school, your office or anywhere your imagination takes you!

- Recognizes and Executes Spoken Commands!
- Records and Replays Music and Sound!
- Runs in 64 Mode on C-64 and C-128!
- Comes Complete with
  - Microphone
  - Operating Software
  - Demo Program
  - Connecting Cable
  - Comprehensive Operating Guide
- **ALL FOR JUST $15.95**
  That's $24 off the original price!

ORDER NOW! SUPPLIES ARE DEFINITELY LIMITED!
(Limit: 3 per order)

Call 1-800-343-0728 or mail this coupon today!

YES! Send me a brand-new VoiceMaster Jr. for only $15.95, plus $4.00 shipping and handling each.

My ❑ Check ❑ MasterCard ❑ Visa ❑ AmEx ❑ Discover Account information is enclosed:

Account # _____ Expires _____
Signature _____
Name _____
Address _____
City, State, Zip _____

Make checks payable to *RUN* Magazine. Please allow 4—6 weeks for delivery. Outside North America, surface shipping/handling is $6.00. Payment in US funds drawn on US bank or by credit card. VoiceMaster Jr. comes with a 30 day replacement guarantee. VM1190

VoiceMaster Jr. Offer / *RUN* Magazine
PO Box 802
Peterborough, NH 03458
603-924-9471

1-800-343-0728

RUN CLASS ADS

HIGH QUALITY PUBLIC DOMAIN PROGRAMS!

Thousands of Public Domain Programs at money saving prices. Send $3.00 for our large catalog and sampler disk to:

EAGLE ENTERPRISES
50 Baker Lane
Dumont, NJ 07628

√Book™

Your spreadsheet or data base doesn't really understand your personal checking!
Check out these features:

- √17 types of checking transactions
- √ Handles overdraft protection
- √ Remembers payees for fast entry
- √ Full screen editing and selective queries
- √ 8 types of reports plus check printing
- √ C64/40 col. and C128/80 col. programs
- √ Supports 1541/1571/1581 drives
- √ Schedules periodic transactions
- √ Custom transaction categories
- √ Monthly balancing
- √ Optional password protection
- √ Utilities with partition tools for sub-directories on 1581 drives
- √ Calculator, and more . . .

Computer Craftware • 17966 Arbolada Way • Tustin, CA 92680
(714) 953-8177 • $34.95 + $2.50 S&H (CA res. add 6¼%)

KASARA MICRO SYSTEMS 1-800-248-2983

Mention this ad and receive a 1541/C64 Diagnostician (a $6.95 value) **FREE** with any $30.00 parts/repair order

SAVE MONEY	on MONTHLY SPECIALS and 90 DAY WARRANTY on all Parts and/or Repairs
LOW PRICES	on EXTENSIVE INVENTORY of Commodore ICs, PSs, PC Bds., and Accessories.
QUALITY SERVICE	at GUARANTEED below suggested retail with quantity discounted prices
FOR 10 YEARS	your RELIABLE SOURCE for Amiga, CBM, and now PC Product Line ICs

Weekday Hours 9:00 AM–6:00 PM EST

LOTSA DISKS! THE BEST in 64/128 PD.

GEOS, Graphics, Clipart, Demos, Games, Bible, MIDI, Music, Educational, Basic 8

We have what you want!
Low prices! Large selection! Fast service!
Send stamp for FREE catalog or $2 for sample disk.

Diskoveries — The Best in PD Software

Diskoveries
PO Box 9153, Waukegan, IL 60085

C-128	$63.00		
1541 Repair	$40.00	Amiga 500	$70.00
1571 Repair	$50.00	Amiga 1000	$87.00
SX64	$66.00	Amiga 2000	$125.00
PC-10, PC Colt Motherboard	$110.00	All Commodore monitors	$67.00

C-64 repair $37.95

128D — $70.00

Prices include parts/labor.
Call for unlisted products.
Discount for dealers & schools
Prices subject to change without notice.

Computer Technologies
1313-B Washington Ave.
Titusville, FL 32780
(407) 269-1081
Toll Free 1-800-237-2835

AUTHORIZED COMMODORE SERVICE CENTER

ReRUN DISKS

Great software at affordable prices from *RUN* magazine. Each disk is packed with programs from the two most recent issues of *RUN*, plus never-before-published BONUS programs.

1-year subscription $69.97 (Single issue $16.47)
CALL TOLL-FREE **1-800-343-0728**

Commodore 1764 REU Owners Upgrade!

Upgrade your 256K REU to 512K for $79. This low cost is for a limited time only. So don't delay. New 1764 upgrades with Commodore heavy duty power module $195. Send cashiers check or money order only. Include payment, REU, name, phone, address and zip clearly printed. Send to:

R.R. Electronics
PO Box 57607
Murray, UT 84157

For recorded message, call 801-265-2871. For orders out of continental US add $10.00.

Maidstone Quest

Maidstone Quest is the exciting new adventure game for the C-128. Travel the 28 levels in search of clues and weapons you will need to destroy Ganef and recover the Maidstone. With 14 commands and dozens of attack/fight sequences, you will be treated to colorful animations on the 80-column screen. Hardware requirements: C-128 with 64K VDC and 1571 disk drive or a C-128D, 80-column RGB monitor. Input via mouse or joystick. Send check or money order for $28.50 (includes shipping) payable to:

Silvasoft • PO Box 1006 • Charlotte, VT 05445

COMMODORE 64 SUPER SOFTWARE

Las Vegas Games #1 — Roulette, Slots, Horse races, Blackjack, and more. Over 20 games **$10.95**
Best of Games #1 — 2 disk set includes Football, Baseball, Bowling, Breakout, Golf and more. Over 50 games **$15.95**
Adventure #1 — Gladiator, Sorcer's Castle and 11 others. **$9.95**
Mixer Disk #1 — Mixture of games, music, business, utililites, etc. **$7.95**
Special Package Deal of the 4 above packs. **$39.95**
Add $2.00 shipping/handling. Send check or money order to:

GSR Productions
3800 Old Cheney Rd., Suite 101/106
Lincoln, NE 68516

RUN
Class Ads

RUN Class Ads were specifically designed to provide the effectiveness of display advertising at the cost of classified advertising. This opportunity gives the Class Ad buyer the lowest cost available to reach *RUN*'s highly qualified circulation of exclusive Commodore 64 & 128 owners.

Need help in designing your Class Ad, questions about rates, frequency or size? Call **HEATHER PAQUETTE at 1-800-441-4403 or 603-924-0100**. We accept checks, money orders, Master Card or VISA.

RUN CLASS ADS

NOW AVAILABLE FOR THE AMIGA!

The MicroFlyte JOYSTICK, the only fully proportional continuously variable joystick control for Flight Simulator II

". . .it transforms an excellent program into a truly realistic flight simulation system" B.A.C.E.

MICROCUBE PRODUCTS

Commodore 64/128
- MicroFlyte ATC Joystick $59.95
- Test/Calibration Disk: A diagnostic tool for your joystick . . . . . $ 4.95

Amiga
- MicroFlyte Joystick—Plugs into the mouse port & works with most software . . . $119.95
- Analog Joystick. . . . . .$ 74.95

Include $4.00 shipping of joystick orders. FSII is a trademark of subLOGIC Corp.

MICROCUBE CORP., PO Box 488, Leesburg, VA 22075 (703) 777-7157

C* BASE BBS SYSTEMS

If you are looking for the fastest, most efficient BBS with the most features for the C64, your wait is NOW OVER! And now CBASE has a C128 version as well. C*BASE supports nearly all hardware additions including SFDs, popularly advertised harddrives, 1581s (Supports partitioning), and ram expanders! Both systems come with BASIC source code, extensive documentation, and free modules such as Empire and Murder Motel! An extensive network of support lines allows easy access to updates and more modules also! To order send check or m.o. & your Name, Alias, Address, Voice#, BBS#, BBS name, and Equip. List.

For More Information Contact
Gunther Birznieks
6390 Apt. B Smithy Square
Glen Burnie, MD 21061

$50.00 64 CBASE
$70.00 128CBASE

(301) 761-9773 VOICE
(301) 761-0306 64 BBS
(703) 751-2729 128BBS
(703) 620-8897 128BBS

C64/128 PUBLIC DOMAIN SOFTWARE

REQUEST FREE CATALOG or send $2 for sample disk and catalog (REFUNDABLE). Categories include education, utilities, games, business, PRINT SHOP graphics, pre-tested programs and more. Rent for 75¢ or buy as low as $1.00 per disk side or for 80¢ for 70 or more. $20 order gets 4 free disks of your choice.

NEXT DAY SHIPPING! SINCE 1986

CALOKE INDUSTRIES (Dept BK)
PO Box 18477, Kansas City, MO 64133

COMMENTS ON QUICK BROWN BOX

"I bought a 64K Quick Brown Box for my C64 and it is absolutely, positively the best addition I ever made to my machine. I now run my whole business with my C64 at lightning speed thanks to you." *Paul Mazaika, THE FLOOR STORE, Fitchburg, MA*

"I have found many uses for combining the QBB with programs captured using Super Snapshot V5. These two utilities have made my two C64 computer systems really whistle!" *Richard Jongstra, Stony Mtn., Manitoba, Canada*

Store your C64 or C128 programs in this battery backed cartridge.
32K to 256K units priced from $75 to $199 ***BROWN BOXES, Inc.***
26 Concord Rd., Bedford, MA 01730 (617) 275-0090, 862-3675

DON'T MISS THIS INTRODUCTORY OFFER

Screen-Pro is a complete graphic screen and animation production system for the C-64/128!

Create FAST menus, displays, intros, windows, instructions, game backgrounds, cartoons, video titles, slide shows, and easily use them in your OWN PROGRAMS!

SCREEN-PRO
Up to 34 screen animations!
Full color & mode support!
Powerful cut, paste, copy!
Draw in any direction fast!
Load and save screens to disk. No need to program!
DOS & directory support!
Plus much, much more!

Satisfaction Guaranteed!

Whether you're a beginner or an expert, whether this is your first program or your last, we're so sure that you'll agree Screen-Pro is the best program of its kind we'll give you a FREE action game just to try it!

2 Disk Set & Full Documentation only **$24.95** postage paid

Send check or money order payable to:

AccuTone Productions 36 Myers Ct. Medford, OR 97501

PD NUDES 1

Public domain collection of attractive adult pictures fill each disk. Order disk 1, 2 or 3 for $10 each or all 3 for $25. You must state you are over 18. Send CHECK ONLY:

Data Foundations, Dept. 300D
PO Box 9324, Akron, OH 44305

SAVE YOUR FAMILY!

Genealogy software with features to fit every budget and requirement: LINEAGES/Starter, LINEAGES/Standard, LINEAGES/Advanced, and our most comprehensive FAMILY ROOTS. Prices $29 & up. Data is compatible between systems and you may upgrade from one to another. Call for FREE information. Satisfaction guaranteed.

QUINSEPT, INC.
PO Box 216, Lexington, MA 02173
1-800-637-ROOT 617-641-2930

COMMODORE 128 & CP/M USERS
WORDSTAR®

WORDSTAR V.2.26 or SuperCalc V.1.05 or WORDPAC (including Grammatic and Spellguard) or MBASIC with compiler, BASIC or FORTRAN 80. **$39.00** each

Wordstar/SuperCalc/MBASIC includes a 763 page Osborne System Manual with extensive CP/M Tutorials as well. 3/$95.00

800-221-7372 Don Johnson
PDSC, 33 Gold St. L3, NYC, NY 10038

COMMODORE AMIGA SERVICE CENTER

AMIGA 500 (Repair) $75.00
C-64 (Repair) $39.95
includes parts/labor flat rate repair
8372A ***Fatter Agnus*** (installed) **$95.00**

C-128 . . . . .$64.95
1541 . . . . . .49.95
1571 . . . . . .64.95
SX-64 . . . . . .74.95

CALL for Commodore Chips & Power Supplies at *low* prices.

24 Hour Turnaround
A&M Computer Repair
20 Guernsey Drive, New Windsor, New York 12550
1-800-344-4102 (914) 562-7271

C-64/128 — AMIGA — IBM SOFTWARE

Thousands of PD/Shareware programs on 100's of disks. Send for free large descriptive catalog or send $2 for catalog and sample disk.* (SPECIFY COMPUTER TYPE.)

*Shareware programs require separate payment to authors if found useful.

DISKS O'PLENTY, INC.
7958 PINES BLVD., SUITE 270R
PEMBROKE PINES, FL 33024

New **from Keystone Software**® ***New***

Two new programs featuring easy-to-use drop down menus and entry windows. View up to 15 records at a time. Scrolling is **fast!** Records are in memory for **fast access and fast sorts**. Print one record at a time, pick and choose many or print the entire list- you have complete control. Import & export records between lists. Both 64 & 128 versions (40 & 80 col.) are included. Ready to use, no setup required.

Mail List Manager™ *$29.95*

The first C64/128 program designed specifically to manage your mailing lists. Sort on Name, Zip Code or any of 9 fields. Print labels, index cards, name badges, file folders.

Video Cassette Library™ *$29.95*

Now easily organize your Video cassette collection! Sort on Title, Category or any of 9 fields, print standard labels or VHS labels.

Label Maker™ by Keystone Software

For C64 & C128 (40 or 80 columns) *$29.95*
11 pre-designed label layouts, including **Audio & Video Cassettes** or "design your own". Use your printer's font and color capabilities. Merge data from your data base.
Rated A by *Run Magazine*.

S/H $4.50 per order
PA residents add 6% tax.
Name _____
Address _____
City/St _____ Zip ____

Cheatsheet Products Inc.
Dept R11 PO Box 8369 Pittsburgh, PA 15218
(412) 243-1049 (9 to 5)

DECEMBER

COMING ATTRACTIONS

HOW TO MAKE $$$ WITH YOUR COMPUTER—
Computers can be used for many applications—entertainment, productivity, education—but did you know that you can also use your computer system to pocket some extra cash? Next month, we'll provide some money-making hints and tips.

DESKTOP PUBLISHING—
The marriage of text and computer graphics has given users the opportunity to create some eye-popping presentations—greeting cards, banners, calendars, newsletters. Find out how you, too, can become a "publisher" with your Commodore.

COMPANION DISKS—
What's the best way to rejuvenate tired, old programs that are collecting dust in your disk storage box? Find out what accessory software is available to bolster the value, and playing enjoyment, of some time-honored programs.

HOLIDAY SHOPPING LIST—
What do you get the computerist who has everything? This roundup of unique gift ideas may provide the answer.

AND THAT'S NOT ALL, FOLKS!—
RUN readers will encounter some interesting type-in programs, reviews of the latest software releases, news, hints about programming and computer use, game and productivity tips, answers to computing questions, feedback from fellow computerists, geoWatch, and lots more.

LIST OF ADVERTISERS

603-924-7138 or 800-441-4403
NATIONAL ADVERTISING SALES MANAGER: **KEN BLAKEMAN**
NORTHEAST/MIDWEST/SOUTHEAST SALES: **NANCY P. THOMPSON**
WESTERN STATES SALES MANAGER: **GIORGIO SALUTI, 415-363-5230**

	Page
Artisoft	57
Briwall	13
Creative Micro Design	10, 11
Damark Int'l, Inc.	7
GameTek	CIV
Lance Haffner Games	49
Loadstar	1
Lyco Computer	CIII
Micro Express	9
Montgomery Grant	2
ON! Magazine	45
Origin Systems	CII
P.A.V.Y. Software	49
Parsec, Inc.	57
Parsec, Inc.	59
Protecto's Computer Direct	5
Ramco Computer Printer	57
Rio/Datel	36, 37
RUN	
RUN Works	39
GEOBASIC	43
Modem	53
ReRUN Back Issues	55
Super Snapshot	59
Voice Master Jr.	61
Class Ads	62–63
Schnedler Systems	17
Software Discounters	15
Software Hut	28
SOGWAP Software	41
Tab Books, Inc.	23
Tektonics Plus, Inc.	59
Tenex Computer Express	25
The Grapevine Group	41
The Soft Group	60
Utilities Unlimited	33

***RUN* ALERT:** As a service to its readers, *RUN* will periodically publish the names of companies who are having difficulties meeting their customer obligations or who have gone out of business. Readers are advised to contact **Margot Swanson, Customer Service Representative, RUN Magazine, 80 Elm St., Peterborough, NH 03458**, before dealing with this company: **Diskette Emporium**.

PRESIDENT
ROGER J. MURPHY

VICE PRESIDENT OF MANUFACTURING/OPERATIONS
DENNIS S. CHRISTENSEN
DIRECTOR OF CORPORATE CIRCULATION & PLANNING
BONNIE WELSH-CARROLL
DIRECTOR OF TECHNOLOGY RESEARCH
JEFFREY D. DETRAY

SINGLE COPY SALES DIRECTOR: **LINDA RUTH**
NEWSSTAND PROMOTION MANAGER: **DEBBIE WALSH**
DIRECTOR OF CREDIT SALES & COLLECTIONS: **WILLIAM M. BOYER**

MANUFACTURING MANAGER: **LYNN LAGASSE**
SYSTEM SUPERVISOR: **DOREEN MEANS**
TYPESETTER: **DEBRA A. DAVIES**
FOUNDER: **WAYNE GREEN**

Manuscripts: All manuscript contributions, queries, requests for writer's guidelines and any other editorial correspondence should be directed to RUN, Editorial Offices, 80 Elm St., Peterborough, NH 03458; telephone: 603-924-0100.

Subscription problems or address changes: Call 1-800-274-5241 (in Colorado, call 447-9330), or write to RUN, Subscription Services, PO Box 58711, Boulder, CO 80322-8711.

Problems with advertisers: Send a description of the problem and your current address to: RUN, 80 Elm St., Peterborough, NH 03458, ATTN.: Margot Swanson, Customer Service.

Back Issues: *RUN* back issues are available for $3.50, plus $1 postage and handling, from: RUN, Back Issue Orders, 80 Elm St., Peterborough, NH 03458; or call 1-800-343-0728.

Inquiries regarding ReRUN: Write to ReRUN, 80 Elm St., Peterborough, NH 03458, or call 1-800-343-0728.

***RUN*'s BBS**: The RUNning Board is *RUN*'s reader feedback bulletin board, which you can call anytime, day or night, seven days a week, for up-to-date information about the magazine, the Commodore industry and news and information of interest to all Commodore users. Call: 603-924-9704.

Lyco Computer
Marketing & Consultants

Since 1981

IBM Business Partner

COMMODORE SOFTWARE

Access:
Echelon $28.95
Mach 128 $29.95
Mach 5 $22.95

Activision:
Maniac Mansion $23.95
Neuromancer $25.95
Rampage $22.95

Berkeley Softworks
Geofile 64 $29.95
Geos 64 2.0 $35.95
Geos 128 2.0 $39.95

Geopublish $29.95
Geofile 128 $39.95

Broderbund:
Print Shop $28.95
Print Shop Comp $22.95
GraphicLib1,2,3,ea $15.95
Carmen San Diego WI $22.95
Carmen San Diego US $25.95

* Call for * New Titles

Microprose:
Gunship $25.95
Stealth Fighter $28.95
Red Storm Rising $28.95

Origin:
Ultima IV $38.95
Ultima V $38.95

Timeworks:
Swiftcalc 128 $31.95
Data Manager 2-64 $12.95
Data Manager 128 $28.95
Word Writer 128 $31.95

ACCESSORIES

Joysticks:
Boss $12.95
Bathandle $16.95
I Controller $10.95
3-Way $22.95

Diskettes:
5¼ Disk Notcher $5.95
Xidex 5¼ DSDD $4.95
Xidex 3½ DSDD $9.95

Surge Protectors
QVS PP-102 $15.95
QVS PP-112 $15.95
QVS PP-104 $23.95

Printer Interfaces:
Xetec Jr. $38.95
Xetec Supergraphics $55.95
Xetec Gold $74.95

Printer Paper:
1000 sheet laser $16.95
Banner Paper 45' Roll $10.95

Drive Maintenance:
5¼ Drive Cleaner $4.95
3½ Drive Cleaner $4.95

PRINTERS

star micronics

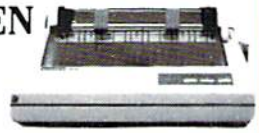
- 180 cps draft
- 45 cps NLQ
- 4 resident fonts
- 216x240 dpi resolution and print pitches ranging from 3 to 20 cpi

NX-1000 II **$149.95**

Panasonic

1180	$149.95
1191	$219.95
1124	$285.95
1695	$409.95
1624	$349.95

CITIZEN



- 120 cps draft speed with improved throughput capabilities
- Built-in variable-width tractor
- compact design w/bottom paper feed minimize space requiremnts.

120 D **$134.95**

Star

NX-1000 II	$149.95
NX-1000 Color	$184.95
NX-1000C	$179.95
NX-1000C Color	$219.95
NX-2410	$255.95

Epson

LX-810	$184.95
LQ-510	$279.95
FX-850	$309.95
FX-1050	$429.95
LQ-850	$469.95
LQ-950	$469.95

Panasonic Office Automation OA

- 9-Pin personal printer
- EZ-Set operator panel
- adjustable push/pull tractor feed
- multiple paper paths
- 192 cps draft
- 38 cps NLQ

KX-P1180 **$149.95**

Citizen

120 D	$134.95
180 D	$154.95
HSP-500	$319.95
GSX-140	$289.95

Brother

M1809	$335.95
1824I	$449.95
M1909	$429.95

Okidata

172	$195.95
182 Turbo	$229.95
320	$329.95
321	$459.95

Printer ribbons, cables, connections and accessories available for all applications. Please Call.

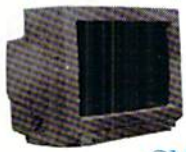
COMMODORE UPGRADES

Excel FSD-2+ Disk Drive

100% Commodore 64C drive compatible, the Excelerator Plus Disk Drive is quieter, smarter, faster, and more reliable than the 1541 and 1541C.

1-year warranty **$139.95**

MAGNAVOX



- RGB, TTL, and comp. inputs
- text switch
- Built-in tilt stand
- 640 H x 240 V

CM8764 **$229.95**

GoldStar

- 12" amber display
- 640h x 200v
- IBM and Commodore compatible

2105 A **$74.95**

MONITORS

Magnavox:

BM7652 Mon. Comp	$84.95
BM7622 Mon. Comp	$84.95
CM8702 Color Comp	$169.95
CM8764 CGA	$229.95
1CM135 RGB Analog	$249.95

GoldStar

2105 A Composite	$74.95

MODEMS

Cardinal:

MB2400EX EXT 2400 Baud	$99.95
MB1200EX EXT 1200 Baud	$69.95

Everex:

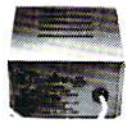
Evercom 12 (INT)	$54.95
Evercom 24 (INT)	$109.95
Evercom 24+ (INT) MNP level 5	$129.95
Evercom 24E+ MNP level 5	$169.95

HARDWARE

64C Computer	$CALL
C 128 D Computer Drive	$CALL
1541 II Disk Drive	$CALL
Colt PC	$CALL
1670 Modem	$CALL

64 Power Supply

The MW 701-A power supply made by Micro R&D features double fused systems, schematics, and a one-year warranty. Stay with the best, stay with Micro R&D.



$34.95

Cardinal

- Low error data transmission and reception over standard dial-up telephone lines
- Hayes compatible with the universally-accepted AT command set
- Automatic Data Standard and Speed Adjust features

MB2400EX External Modem **$99.95**

Why shop at Lyco Computer? Lyco Computer offers quality name brand computer products at prices 30% to 50% below retail. If you do not see the product you want advertised, call Lyco Marketing toll free. How do I know I will get the product I need? Our marketing staff receives continous formal training by our manufacturers. Though our strict guarantee on providing only new merchandise prohibits free trial periods and a guarantee on compatibility, a wealth of knowledge is available to our customers. As thousands of people every week capitalize on our savings and services, we hope you too, will make Lyco Computer your first choice. What about warranty or service? Our Customer Service Department is available at (717) 494-1670 to assist you. We back all of our manufacturer's stated warranty terms. Before returning any item that appears to be defective, we ask that you call our Customer Service Department. Will you rush an item to me? We offer next day air, two day air, standard UPS, and postal international shipping services. Temporary shortages are normally filled within 10 days. How do I order? We have always accepted C.O.D. orders through UPS. Prepaid cash orders over $50 are shipped freight-free. For orders under $50, please add $3 for freight. Personal and company checks require a 4 week waiting period. Visa, Master Card, American Express and Discover Card orders are accepted, for your convenience, but we cannot pass along the 4% discount offered for cash. Prices in this ad reflect cash prices. Purchase orders are accepted from Educational Institutions. We charge sales tax on deliveries in Pennsylvania. For APO, FPO, and international orders, add $5 plus 3% for priority mail. Advertised prices and availability are subject to change. Simply send your order to Lyco Computer, P.O. Box 5088, Jersey Shore, PA. 17740. Or, call 1-800-233-8760 or (717) 494-1030. Return restrictions apply. Not responsible for typographical errors.

ATTENTION EDUCATIONAL INSTITUTIONS:
If you are not currently using our educational service program, please call our representatives for

Sales: 1-800-233-8760 or 717-494-1030
Fax: 717-494-1441
Hours: Mon.-Fri. 9a.m.-9p.m.
Sat. 10a.m.-6p.m.
Customer Service: 717-494-1670
Hours: Mon.-Fri. 9a.m.-5p.m.

VISA MasterCard American Express DISCOVER

Our friendly sales staff can help you with any questions you have!

1-800-233-8760

Price Guarantee

Since 1981, we have led the industry by continuing to offer the lowest national prices while providing quality service. Many companies have come and gone trying to imitate our quality and service. If by some oversight, we do not have the lowest prices advertised on the products you desire, then we would appreciate the opportunity to rectify the oversight.

YOUR MOVE...

Now, your favorite board games from Parker Brothers® and Milton Bradley® have been brought to life on GameTek software.

Enhancing these American classics with exciting computer graphics and intriguing sound effects makes games like Payday™, Advance to Boardwalk™, and Candy Land™ come to life. (Plus, you don't have to worry about losing all the pieces or cleaning up afterwards!)

GameTek computer software is so much fun, it'll Boggle™ your mind. You won't be Sorry™! **It's your move!**

GameTek™

2999 NE 191st Street • North Miami Beach • Florida 33180 • (305) 935-3995 • Fax (305) 932-8651

©1988 GameTek/IJE, Inc. CHUTES AND LADDERS, CANDY LAND AND GO TO THE HEAD OF THE CLASS ARE REGISTERED TRADEMARKS OF MILTON BRADLEY CO ©1990 MILTON BRADLEY CO. Sorry is Parker Brothers' registered trademark for its slide pursuit computer game. ©1934, 1950, 1972, 1990 Parker Brothers. Big Boggle is a Parker Brothers' registered trademark for its hidden word computer game. ©1973,1976,1990 Parker Brothers.Advance to Boardwalk is Parker Brothers' registered trademark for its hotel building computer game. ©1985,1990 Parker Brothers. Pay Day is Parker Brothers' registered trademark for its calendar computer game. ©1975, 1990 Parker Brothers, Division of Tonka Corporation, Beverly, MA USA 01915. Used under license from Parker Brothers.